PLANTS OF COAHUILA, EASTERN CHIHUAHUA, AND ADJOINING ZACATECAS AND DURANGO, III

IVAN M. JOHNSTON

CYPERACEAE

by H. K. SVENSON

Cyperus (*Eucyperus*) **esculentus** L. Sp. Pl. 45 (1753).

COAHUILA: Sierra del Carmen, Sept. 8, 1936, *Marsh 748;* Sierra Cruces, near Santa Elena, in arroyo, not common, *Stewart 288, 2176.* CHIHUAHUA: 5 km. north of Escobillas, frequent on silty flat, *Stewart 2372;* Pirámide, moist heavy soil near ranch, *Johnston 8138;* 7½ mi. south of Pirámide, moist silty flat above labor, *Johnston 8105a;* 10 mi. southeast of Organos, locally common in low ground at foot of slope, *Stewart & Johnston 2035;* 12 mi. south of Camargo, *White 2226.*

Widely distributed in America and in the Old World.

Cyperus (*Eucyperus*) **acuminatus** Torr. & Hook. Ann. Lyc. N. Y. **3:** 435 (1836).

COAHUILA: Mesa Grande, about 40 km. northwest of Hac. Encantada, in water of tinaja, fairly common, *Stewart 1638;* along trail from southern extremity of Hillcoat Mesa to Buena Vista headquarters, July 27, 1938, *Marsh 1491.*

Widely distributed across southern parts of the United States. Marsh's material is referable to the var. *cyrtolepis* (Torr. & Hook.) Kükenth.

Cyperus (*Eucyperus*) **ochraceus** Vahl, Enum. **2:** 325 (1806).

COAHUILA: Muzquiz Swamp, 1936, *Marsh 889.*

Louisiana and eastern Texas south through eastern Mexico to Argentina.

Cyperus (*Eucyperus*) **amabilis** Vahl, Enum. **2:** 318 (1806).

CHIHUAHUA: Hills northwest of Chihuahua, damp gravelly places on ledges, *Pringle 911.*

The cited specimen belongs to the var. *macrostachyus* (Boeck.) Kükenth. The species is widespread in the tropics of both hemispheres.

Cyperus (*Eucyperus*) **seslerioides** H.B.K. Nov. Gen. et Sp. **1:** 209 (1815).

CHIHUAHUA: Hills northeast of Chihuahua, Sept. 16, 1885, *Pringle 554.*

Trans-Pecos Texas (Big Bend) and Arizona, south through Mexico to Venezuela.

Cyperus (*Juncellus*) **laevigatus** L. Mant. Pl. 179 (1771).

CHIHUAHUA: Lake Santa Maria, *Nelson 6417;* 3 mi. west of Camargo, *White 2267a.*

Ranging from Texas to California and southward; of world-wide distribution in the tropics, usually in saline or brackish situations.

Cyperus (*Pycreus*) **niger** R. & P. Fl. Peruv. **1:** 47 (1798).

COAHUILA: Saltillo, shallow muddy creek, 1898, *Palmer 177;* Jimulco, warm springs, May 13, 1885, *Pringle 124.* CHIHUAHUA: Valley near Chihuahua, wet places, Sept. 27, 1886, *Pringle 809;* Presa de Chihuahua, 1936, *LeSueur 1108;* 3 mi. west of Camargo, *White 2267.*

Ranging from Texas to California and south into South America. The

Chihuahua material cited is referable to the var. *castaneus* (Wats.) Kükenth.

Cyperus (*Pycreus*) **albomarginatus** Mart. & Schrad. ex Nees in Mart. Fl. Bras. **2**(1): 9 (1842).

CHIHUAHUA: Wet places in the mountains northwest of Chihuahua, Oct. 7, 1886, *Pringle 810*.

Widely distributed in the tropics of both hemispheres; extending north through Mexico into the southern parts of United States.

Cyperus (*Mariscus*) **tenuis** Swartz, Prodr. Veg. Ind. Occ. 20 (1788).

COAHUILA: Sierra del Carmen, Sept. 12, 1936, *Marsh 835;* Muzquiz Swamp, 1936, *Marsh 934;* Cañon Bocatoche, scattered along rocky arroyo on valley floor, *Muller 3109*.

Widely distributed in the tropics of America and west Africa. Muller's collection is immature and its identification is somewhat doubtful; it was originally identified as *C. uniflorus* var. *pseudothyrsiflorus* Kükenth., but it does not have the hardened scales characteristic of *C. uniflorus*. The Coahuilan collections cited possibly can be referred to *C. breviradiatus* Liebm.

Cyperus (*Mariscus*) **spectabilis** Link, Hort. Berol. **1**: 318 (1827).

COAHUILA: Sierra del Carmen, Cañon Sentenela, moist stream-side, *Wynd & Mueller 595;* Zacate, *Marsh 511;* Cañon Bocatoche, scattered on grassy valley floor, *Muller 3134;* Sierra del Pino, near La Noria, gravelly arroyo banks, *Stewart 1216, Johnston & Muller 455;* tableland north of Cañon del Cuervo Chico, base of low rounded limestone hills, gravelly places, *Johnston 8561*. CHIHUAHUA: Sierra R'ca, Cañon Madera, frequent in wet rocky arroyo, *Stewart 2494;* Pirámide, moist rocky place near hacienda, *Johnston 8130a;* canyon west of Organos, gravelly arroyo banks with *Acacia, Stewart & Johnston 2076;* rocky hills near Chihuahua, *Pringle 311;* western base of Sierra Santa Eulalia, south of Potosi Mill, about north-facing ledges, fairly common, *Stewart & Johnston 2115*. ZACATECAS: Valley 15 km. west of Concepcion del Oro, *Stanford et al. 523*.

Ranging from Oklahoma and Arizona south to southern Mexico.

Cyperus (*Mariscus*) **apiculatus** Liebm. Vidensk. Selsk. Skr. Kjobenh. V.**2**: 220 (1851).

CHIHUAHUA: Samalayuca, sand dunes, 1935, *LeSueur 1720*.

Known only from Mexico.

Cyperus (*Mariscus*) **Fendlerianus** Boeckl. Linnaea **35**: 520 (1868).

COAHUILA: Sierra del Carmen, Sept. 7, 1936, *Marsh 801;* Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 512, 580;* Hac. La Babia, open valley floor, *Wynd & Mueller 654;* Sierra del Pino, La Noria, flats in dry pine woods, *Johnston & Muller 540*. CHIHUAHUA: Pirámide, about rock masses, *Johnston 8127, 8130;* 7½ mi. south of Pirámide, moist silty flat above labor, *Johnston 8105;* Sierra Virulento, 2-3 mi. east of Rancho Virulento, rocky slopes and ridges, *Johnston 8072a, 8074;* sand dunes, Samalayuca, 1935, *LeSueur 1724;* rocky hills near Chihuahua, 1885, *Pringle 310;* western base of Sierra Santa Eulalia, south of Potosi Mill, about north-facing ledges, rare, *Stewart & Johnston 2116*.

Ranging from Texas to Arizona and south to southern Mexico. The cited collection from the Sierra del Pino is typical *C. Fendlerianus*. The other collections have conspicuously pedunculate clusters of spikelets and belong to the var. *debilis* (Britt.) Kükenth.

Cyperus (*Mariscus*) **Mutisii** (H.B.K.) Griseb. Fl. Brit. W. Ind. 567 (1864).

CHIHUAHUA: Rocky hills near Chihuahua, wet ledges, 1885, *Pringle 512.*

Arizona south through Mexico into South America. Pringle's collection no. *512* is cited as *C. tetragonus* var. *Pringlei* by Kükenthal, Pflanzenr. 101 (IV. **20**): 493 (1936). The above cited specimen, in the Gray Herbarium, seems identical with *C. Mutisii* (at least as to Mexican specimens) and is very different from *C. tetragonus.* Perhaps Pringle's number is a mixture. Horvat, Cathol. Univ. Amer. Biol. Series **33**: 78 (1941), refers the New York Botanical Garden specimen of *Pringle 512* to *C. Pringlei* Britt. but explicitly excludes the Philadelphia Academy specimen bearing the same number.

Cyperus (*Mariscus*) **inflexus** Muhl. Descr. Gram. **16**: 1817.

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 516;* mountains 21 mi. northeast of Monclova, Sept. 1880, *Palmer 1330.* CHIHUAHUA: Pirámide, base of large rock-masses, *Johnston 8123;* Sierra Encinillas, 4 km. north of Fierro, damp sand arroyo, fairly common, *Stewart 783;* rocky flat just east of Organos, wet soil among grass, *Stewart & Johnston 2060.*

Widely distributed in temperate and tropical America.

Cyperus (*Mariscus*) **uniflorus** Torr. & Hook. Ann. Lyc. N. Y. **3**: 431 (1836).

COAHUILA: Don Martin Dam, *White 1390.* CHIHUAHUA: Sandhills south of Samalayuca, Sept. 23, 1886, *Pringle 808;* sand dunes, Samalayuca, 1935, *LeSueur 1723.*

Ranging from Arizona to Arkansas south into northern Mexico.

Cyperus (*Torulinium*) **ferax** L. C. Rich. Act. Soc. Hist. Nat. Paris **1**: 106 (1792).

COAHUILA: Don Martin Dam, *White 1378;* Sierra del Carmen, Sept. 5, 1936, *Marsh 809;* Muzquiz Swamp, 1936, *Marsh 933;* valley below Saltillo, abundant, 3 ft. tall, *Gregg 539;* Rancho La Botica, Valle de las Delicias, by water, *Stewart 2853, 2926.* CHIHUAHUA: By stream near Chihuahua, Oct. 30, 1885, *Pringle 588.*

Widely distributed in temperate and tropical parts of the world.

Scirpus acutus Muhl. ex Bigelow, Fl. Boston. 15 (1814); Beetle, Am. Jour. Bot. **28**: 693 (1941).

Scirpus lacustris var. *occidentalis* Wats. Bot. Calif. **2**: 218 (1880).

VERNACULAR NAME: Tule.

COAHUILA: Saltillo, rare in this locality, 1898, *Palmer 258.* CHIHUAHUA: Rio Conchos at Meoqui, *LeSueur 1099;* 3 mi. west of Camargo, *White 2262.*

The collection from Saltillo is immature and its identification is questionable. The collection from Meoqui is young but recognizable. White's material from Camargo is in prime condition. The achenes are 2.5 mm. long, the yellowish scales are smooth except for the whitened-scabrous midrib and mucro and the strongly fringed margin. The collection, which closely resembles the pale specimens characteristic of the southwestern United States, consists of two plants, one with lance-ovate spikelets (10 × 4 mm.), the other with elongate spikelets (up to 14 × 2.5 mm.). There does not seem to be any clear-cut difference between *S. acutus* and *S. validus,* either in character of the root-stocks and root, or in the shape, size, or microscopic details of the achenes.

Scirpus Olneyi Gray, Boston Jour. Nat. Hist. **5**: 238 (1845).

COAHUILA: Sierra del Carmen, Aug. 9, 1936, *Marsh 744;* Monclova, *Marsh 1695;* Cuatro Cienegas, *Marsh 2076.* CHIHUAHUA: Lake Santa Maria, *Nelson 6419.*

Widely distributed in United States and extending south into tropical America. The species differs from *S. americanus* in its very short involucral bract, usually blunter spikelet, much smaller style-branches, and more slender anthers.

Scirpus lineatus Michx. Fl. Bor. Am. **1**: 32 (1803).

COAHUILA: Sierra del Carmen, Cañon Sentenela, stream-side, *Wynd & Mueller 545*.

An abundant species of eastern United States, extending southwest to Texas. Apparently not previously reported from Coahuila.

Scirpus coahuilensis Svenson, sp. nov.

Rhizomate duro adscendente ad apicem in fasciculis grandis caespitosis terminato; fasciculis 3–20-foliatis, prominenter usque ad 8 cm. chartaceo-vaginatis; foliis firmis, glaucis, elongatis, 3–4 dm. longis, perangustis 0.5 mm. latis, planis vel concavis, margine serratis, ad apicem flexuoso-filiformibus; culmis strictis, basi foliatis, glaucis, filiformibus, 4–5 dm. altis, singulatim e fasciculis productis; foliis involucri filiformibus 1–10 cm. longis inflorescentiam plerumque superantibus; spiculis 12–20 lanceolatis, 7–10 mm. longis, 10–12-floris, laxe coarctatis sessilibusque vel in radiis 1–3 cm. longis glomerulatis; squamis membranaceis, albido-flavescentibus, ovatis, 4 mm. longis, glabris, frequenter scabrido-mucronatis; achaeniis late obovatis, plano-convexis vel obscure trigonis, 1.8–2 mm. longis, 1.4 mm. latis, nitide brunneis, leviter papillosis; setis 2–4, levibus, plerumque achaenio multo brevioribus; stylo 3-fido, sub ramis 2 mm. longo, minute fimbriato ad apicem, basi haud incrassato; staminibus 3, antheris 1.5 mm. longis.

COAHUILA: High western ridge of Sierra de la Fragua, north of Puerto Colorado, abundant, coarse tufts 1–3 ft. tall, on rocky slopes with scrub oaks and *Pinus Pinceana*, Sept. 2, 1941, *Johnston 8763* (TYPE, Gray Herb.).

The relationships of this curious plant are obscure. Its general appearance, at least in the herbarium, is that of a much-stiffened *Eriophorum* with somewhat branched immature inflorescence. However, the general texture of the spikelets and especially of the bristles is quite different from that found in *Eriophorum*. One might infer that it represented an unusual species of *Bulbostylis*, but the plant is perfectly glabrous, and, furthermore, has practically no swollen style-base. Though the achenes, in color and shape, are somewhat similar to those of *Fimbristylis spathacea*, the plant does not appear to be related to either the New World or the Old World species of *Fimbristylis*. When the plant was collected it was assumed to be a species of *Carex* of the general relationship of *C. praegracilis*, since its individual spikelets superficially resemble those of that species. The plant forms very coarse clumps becoming a decimeter or more thick at the base. Its extremely abundant stems and leaves are ascending or widely spreading or even lie along the ground and may cover an area nearly a meter broad. It is a xerophyte growing in well-drained rocky calcareous soil along a ridge clothed with scattered pines and oaks.

Eleocharis rostellata Torr. Fl. N. Y. **2**: 347 (1843).

COAHUILA: Bank of stream in cienega, 7 km. south of Cuatro Cienegas, *Harvey 1235*.

Saline or alkaline marshes from Nova Scotia and British Columbia south into northern Mexico; also in South America.

Eleocharis interstincta (Vahl) R. & S. Syst. **2:** 149 (1817).

COAHUILA: Muzquiz Swamp, 1936, *Marsh 932*.

Ranging from Texas to Florida and throughout the New World tropics.

Eleocharis cellulosa Torr. Ann. Lyc. N. Y. **3:** 298 (1836).

COAHUILA: Muzquiz Swamp, 1936, *Marsh 930*; Monclova, along Rio Monclova, *White 1770*.

Ranging, chiefly in brackish and coastal waters, in southern United States, West Indies, and Yucatan. Not previously reported from northern Mexico.

Eleocharis caribaea (Rottb.) Blake, Rhodora **20:** 24 (1918).

VERNACULAR NAME: Tulillo.

COAHUILA: Sabinas River, Muzquiz, *Marsh 403;* Monclova, *White 1722, 1749, 1763;* Rancho Coyote, Valle Acatita, about spring, *Stewart 2736*.

Widely distributed in temperate and tropical regions.

Eleocharis montevidensis Kunth, Enum. **2:** 144 (1837).
Eleocharis arenicola Torr. in Engelm. & Gray, Boston Jour. Nat. Hist. **5:** 237 (1847).

COAHUILA: Sierra del Carmen, Sept. 8, 1936, *Marsh 747;* Santa Anna Canyon, *Marsh 451;* Monclova, *Marsh 1700;* Saltillo, along shallow creek, 1898, *Palmer 255;* Saltillo, *Arsène 10628*. CHIHUAHUA: Chihuahua, low wet bottoms, 1908, *Palmer 30;* southwest of Chihuahua, *LeSueur 1098*.

Ranging from South Carolina to California and south to central Mexico; also in Argentina and Uruguay.

Eleocharis Parishii Britton, N. Y. Micros. Soc. Journ. **5:** 110 (1889).

CHIHUAHUA: Lake Santa Maria, *Nelson 6415;* 3 mi. west of Camargo, *White 2261*.

Western United States south into northern Mexico.

Eleocharis macrostachya Britton in Small, Fl. S. E. U. S. 184, 1327 (1903).

VERNACULAR NAME: Tule.

COAHUILA: High mesa in the Sierra Encantada 6 km. northwest of Buena Vista, erect in water of arroyo, fairly common, *Stewart 1423;* along trail from southern extremity of Hillcoat Mesa to Buena Vista headquarters, July 27, 1938, *Marsh 1505;* large charco in valley southeast of El Almagre, abundant in wet soil and standing water, *Johnston & Muller 1221*. CHIHUAHUA: Jimenez, Rio Florido, edge of water, *White 2102;* 37 mi. north of Escalon, by small pond, *White 2079*.

Widely distributed in Western United States and south into Mexico.

Eleocharis montana (Willd.) R. & S. var. **nodulosa** (Roth) Svenson, comb. nov.
Scirpus nodulosus Roth, Nov. Pl. Sp. 29 (1821).

COAHUILA: Cañon Indio Felipe, Sierra Hechiceros, in water along creek, 1 m. tall, *Stewart 143*.

Florida to Arizona and southward in tropical America. Typical *E. montana* is based upon plants from the high mountains of Colombia with thickened non-septate culms. Plants from lower altitudes have the culms more or less distinctly septate and may be distinguished as the var. *nodulosa*.

Fimbristylis spadicea (L.) Vahl, var. **puberula** Chapm. Fl. S. U. S. 549 (1860).
Fimbristylis puberula (Michx.) Vahl, Enum. **2:** 289 (1806).

COAHUILA: Cuatro Cienegas, 1939, *Marsh 2078*.

Representing the phase of the species with puberulent scales that is common in the interior of the continent.

Fimbristylis annua (All.) R. & S. Syst. **2**: 95 (1817).

CHIHUAHUA: Valley northeast of Chihuahua, Sept. 16, 1885, *Pringle 555.*

A very widely distributed plant, abundant in all tropical and temperate parts of the world.

Bulbostylis capillaris (L.) C. B. Clarke in Hook. Fl. Brit. Ind. **6**: 652 (1893).

CHIHUAHUA: Pirámide, along sheltered crevices in large rock-masses on plain, *Johnston 8145.*

The first collection of the species seen from Mexico. The pale-stramineous mature achenes average 1 mm. long. The spikelets are a trifle larger (up to 7 mm. long) and more arcuate-umbellate than in specimens from the United States. Ranging from Maine to Minnesota south to Texas; also on the Pacific coast from Oregon southward.

Bulbostylis juncoides (Vahl) Kükenth. ex Osten, Ann. Mus. Nac. Montevideo II. **3**: 188 (1931).

CHIHUAHUA: Sierra de los Organos, 1937, *LeSueur 1286;* hills northeast of Chihuahua, Aug. 20, 1885, *Pringle 529.*

Ranging from Texas to Arizona and south into Mexico; also in South America. Our plants have the loose inflorescence characteristic of var. *ampliceps* Kükenth.

Schoenus nigricans L. Sp. Pl. 64 (1753).

COAHUILA: Cuatro Cienegas, along irrigation ditch, *White 1921;* Cuatro Cienegas, *Marsh 2074.*

The material from Cuatro Cienegas has scales and bracts pale straw-colored rather than dark brown or black, as is usual in this species. *Schoenus nigricans* has a wide distribution in the Old World. It is known only from scattered stations in northern Mexico and southern parts of the United States.

Hemicarpha micrantha (Vahl) Pax in E. & P. Nat. Pflanzenfam. **2**^{2}: 105 (1887).

CHIHUAHUA: Hills northeast of Chihuahua, Oct. 7, 1885, *Pringle 524.*

Widely distributed in the United States and southward to South America.

Dichromena colorata (L.) Hitchc. Rep. Mo. Bot. Gard. **4**: 141 (1893).

COAHUILA: Sabinas River near Muzquiz, 1936, *Marsh 400;* Muzquiz, 1938, *Marsh 1168.*

An abundant species in tropical America.

Cladium jamaicense Crantz, Inst. **1**: 362 (1766).

COAHUILA: Santa Anna Canyon, 1936, *Marsh 439;* ponds at El Anteojo, 3 mi. west of Cuatro Cienegas, forming very coarse clumps in deep water with *Typha,* stems becoming 10–12 ft. tall, conspicuous, *Johnston 8871.*

The mature achene is 3 mm. long, dark-brown except for the acute yellowish tip, smooth and shiny, with a broad truncate base. The "saw-grass" of the tropical savannas.

Fuirena simplex Vahl, Ecol. Am. **2**: 8 (1798), Enum. **2**: 384 (1806).

Fuirena obtusiflora Vahl. Ecol. Am. **2**: 8 (1798).

Fuirena Schiedeana Kunth, Enum. **2**: 183 (1837).

Fuirena squarrosa var. *aristulata* Torr. Ann. Lyc. N. Y. **3**: 291 (1836).

COAHUILA: Muzquiz Swamp, 1936, *Marsh 929;* Hermanas, 1939, *Marsh 1573;*

Monclova, Aug. 1880, *Palmer 1336;* Monclova, *Marsh 1740;* El Anteojo, 3 mi. west of Cuatro Cienegas, edge of brackish lake, *Johnston 7124;* Rancho La Botica, by water, common, *Stewart 2941;* Cañon del Agua Grande, west of Las Delicias, on gypsum by water, common, 11 dm. tall, *Stewart 2798;* Rancho del Coyote, eastern margin of Valle de Acatita, edge of spring, common, *Stewart 2734;* Cañon del Indio Felipe, Sierra Hechiceros, in water along creek, 8 dm. tall, *Stewart 144.*

The specimens show the great variability in stature and conformation of perigonial bristles inherent in many species of *Fuirena.* From the closely related *F. squarrosa,* characteristic of the eastern United States, *F. simplex* is readily separated by the glabrous (sometimes minutely puberulent) style. Its relative has the style densely hispid. The scales vary from hispid to nearly smooth and the outer row of bristles is frequently longer than the ovate-tipped inner group. In one collection (*Marsh 929*) the outer series of bristles is conspicuously swollen in the middle. *Fuirena simplex* and *F. obtusiflora* (and *Rynchospora glauca*) were collected by von Rohr in South America, at "Baia Chico" on the northeastern coast of Venezuela. *Fuirena Schiedeana* was obtained by Schiede at Vera Cruz in 1829.

Carex Schiedeana Kunze, Suppl. Riedg. 119. *t. 30* (1842); Mack. No. Am. Fl. **18:** 225 (1935), No. Am. Carices *t. 261* (1940).

COAHUILA: Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1447;* Puerto San Lazaro, scattered on fine soil in shelter of shrubs on rocky slope, *Muller 3062;* Carneros Pass, hillsides, 1890, *Pringle 3218;* 4 km. east of Fraile, on mountain, *Stanford et al. 356;* Sierra del Pino, La Noria, on shale in deep shaded arroyo, *Johnston & Muller 494;* Sierra del Pino, La Noria, under shrubs on arroyo-bank, *Johnston & Muller 502;* Sierra del Pino, La Noria, shelter of oaks on flat, *Johnston & Muller 459;* west base of Picacho del Fuste, on north-facing mountain-side, base of *Yucca* on gypsum beds, *Johnston 8400;* west base of Picacho del Fuste, base of *Yucca* on Red Beds, *Johnston 8449;* tableland north of Cañon del Cuervo Chico, grassy rocky slope of low rounded limestone hill, *Johnston 8557;* Sierra Madera, Cañon Charretera, opening in oak thickets on rocky flats, *Johnston 9059, 9144;* high western ridge of Sierra Fragua, north of Puerto Colorado, under pines on east slope, one plant, *Johnston 8770;* Sierra Cruces, 7 mi. north of Santa Elena, dry limestone hillside, about the base of *Yucca* and *Dasylirion, Johnston & Muller 316;* Sierra Mojada, Cañon San Salvador, sparse in moist shaded upper canyon, *Muller 3305.* CHIHUAHUA: Sierra Almagre, sparse on open slope with brush and some grass, *Johnston & Muller 1190;* Sierra Almagre, moist base of cliff in shaded deep canyon, *Johnston & Muller 1194.*

Ranging from western Texas south to central Mexico.

Carex praegracilis W. Boott, Bot. Gaz. **9:** 87 (1884); Mack. No. Am. Fl. **18:** 35 (1931).

CHIHUAHUA: Chihuahua, forming large patches in low wet bottom land, 1908, *Palmer 31.*

Widely distributed in the western United States.

Carex potosina Hemsl. Biol. Centr. Am. Bot. **3:** 474 (1885).

COAHUILA: 10 mi. east of Fraile, low place on silty valley floor, *Johnston 7306.* ZACATECAS: Valley 15 km. west of Concepcion del Oro, *Stanford et al. 557.*

Known only from the states of Coahuila, Zacatecas, and San Luis Potosi.

Carex Frankii Kunth, Enum. Pl. **2:** 498 (1837).

COAHUILA: Sierra del Carmen, Cañon Sentenela, moist stream-side, *Wynd & Mueller 550.*

Widely distributed in United States and extending south to Texas. Not previously reported from Mexico. The achenes are 2 × 1.5 mm. in dimensions, somewhat larger than those given by Mackenzie for the species.

Carex hystricina Muhl. ex Willd. Sp. Pl. **4**: 282 (1805).

COAHUILA: Sierra del Carmen, Cañon Sentenela, moist stream-side, *Wynd & Mueller 549*.

Widely distributed in United States. Not previously reported from Mexico. The perigynia are 7 mm. long, very firm, and of a glistening stramineous color. In these respects the collection is much like those seen from the southern United States. The perigynia thus reach the maximum size recorded by Mackenzie. The achenes are also a trifle larger than the common specimens from the northern United States.

Carex Emoryi Dewey, Torr. Bot. Mex. Bound. Surv. 230 (1859).

COAHUILA: Muzquiz, 1936, *Marsh 1081*.

Not previously reported from Mexico. The original collection was made on the Upper Rio Grande.

Carex filifolia Nutt. Gen. **2**: 204 (1818).

COAHUILA: 11 km. northeast of Jimulco, rolling hills, *Stanford et al. 35*.

This collection appears to represent *C. filifolia*, a species widely distributed in the western United States but heretofore unreported from Mexico. Perhaps an undescribed species may be represented. The perigynia, though very young, show a beaked oblique apex. From other herbarium specimens examined the Mexican collection differs in its elongate, many-flowered staminate inflorescence. This exceeds 2 cm. in length but falls within the measurements for the part given by Mackenzie.

PALMAE

Brahea bella Bailey, Gentes Herb. **6**: 194. *f. 99, 100* (1943).

COAHUILA: Muzquiz, Dec. 5, 1936, *Marsh 1061;* Sierra Gloria, 1939, *Marsh 1925, 2210*.

The type of *B. bella* was collected by Prof. L. H. Bailey "on Rancho San Geronimo (Mangum) about fifty miles northwest from the postoffice at Muzquiz near the upper waters of the Rio La Babia." Additional material was obtained further northward "at Rancho Agua Dulce (Persons)." He states that the palm grows "on plains and mountains at altitude of 2000–3000 feet, in clefts and seams of limerock and among separated boulders of it, growing as single trees in many sizes but often covering the valley floor as if in forests and abundant on cliffs and broken ranges at higher altitudes."

The collections I have cited above are fragmentary or juvenile and have been doubtfully identified as *B. bella* by Bailey. They suggest that the species ranges along the escarpment of the plateau in northern Coahuila and in the outlying sierras in middle-eastern portions of the state. Perhaps also belonging to the species are the palms observed about the high limestone cliffs in the Sierra Gavia at the north portal of Tres Rios Pass, about 70 km. south of Monclova.

The present species is most closely related to *B. Berlandieri* Bartlett, known only from La Silla, the type station, La Mitra, and Cañon Huesteca, in the vicinity of Monterey. This species, which possibly may just enter Coahuila in the mountains between Monterey and Saltillo, is said to differ from *B. bella* in having the fronds, at least beneath, distinctly glaucous and blue-green, rather than bright green on both sides and somewhat glossy and shiny. Since many elements of the flora found on the mountains about Monterey range northwestward at least to the Sierra Gavia and Sierra Gloria, south and southeast of Monclova, it would not be surprising if the palms known from these latter ranges prove either referable to *B. Berlandieri* or intermediate between that species and *B. bella.*

LEMNACEAE

Lemna gibba L. Sp. Pl. 970 (1753).

CHIHUAHUA: Samalayuca, in springs, April 17, 1852, *Wright 1892.*

Nebraska to Texas and west to California; northern Mexico; Old World.

COMMELINACEAE

Tradescantia crassifolia Cav. Icones **1:** 54. *t. 75* (1791).

VERNACULAR NAME: Lino de Maiz.

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 566;* Sierra del Carmen, Sept. 12, 1936, *Marsh 816;* Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1468;* Saltillo, July 16, 1848, *Gregg 253;* Carneros Pass area, 1880, *Palmer 2016;* highest peaks of the Sierra Cruces, rock crevices, fl. purple, *Stewart 1142.* CHIHUAHUA: Sierra Rica, Cañon Madera, crevices of cliffs, fl. purple, *Stewart 2491;* valley 4 km. south of Rancho Encinillas, clump of mesquites, fl. blue, *Stewart 722;* slopes about high valley at northwest end of Sierra Diablo, fl. purple, *Stewart 958;* Sierra Organos, *LeSueur;* El Pozo, Sierra Santa Eulalia, fl. lavender, *White 2416;* hills near Chihuahua, *Pringle 691, 1386.*

A variable but readily recognizable widely ranging species which reaches its northern limit in our area. The stems and lower leaf-surfaces are usually white-villous, but plants glabrescent in various degrees are frequent.

Tradescantia brachyphylla Greenm. Proc. Am. Acad. **33:** 471 (1898).

COAHUILA: Mountains 4 km. east of Fraile, moist place, fl. purple, *Stanford et al. 357a.* ZACATECAS: Concepcion del Oro, among thorny shrubs high up steep canyon-sides where moist and shady, fl. bright rose-color, rare, 1904, *Palmer 323;* 15 km. west of Concepcion del Oro, *Stanford et al. 554.*

Known from the Sierra Madre of Nuevo Leon and Tamaulipas and from Puebla.

Tradescantia Wrightii Rose & Bush, Trans. Acad. Sci. St. Louis **14:** 188 (1904).

COAHUILA: Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1479;* western base of Picacho del Fuste, gypsum beds on north slope, corolla purple, *Johnston 8396;* mountains 4 km. east of Fraile, moist place, *Stanford et al. 360;* Cañon del Agua Chica, west of Las Delicias, limestone slope, fl. purple, *Stewart 2828;* ? Rancho del Coyote, east side of Valle Acatita, on gypsum in arroyo, fl. white, *Stewart 2746.* CHIHUAHUA: Northwest end of Sierra Diablo, open hillside, fl. lavender, *Stewart 978.*

A species known only from our area and from trans-Pecos Texas (mountains near El Paso, *Wright 701,* type; Guadalupe Mts.; and near Alpine). In our area it is readily recognized by its simple stem, 15–25 cm. tall, which bears a single cauline leaf and is terminated by a sessile cluster of flowers.

The Texan material is completely glabrous, but the Mexican specimens have glanduliferous hairs on the pedicels.

Tradescantia pinetorum Greene, Erythea **1**: 247 (1893).

CHIHUAHUA: Cool slopes in the hills northwest of Chihuahua, *Pringle 804*.

A characteristic plant of the highlands of western Chihuahua and adjacent Sonora and Arizona. It is readily recognized by the very abundant minute retrorse hairs which usually clothe its slender stems.

Tradescantia Karwinskyana Schultes, Syst. Veg. **7**^{2}: 1165 (1830).

COAHUILA: Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1416*; Sierra Gloria, *Marsh 1893*; Carneros Pass area, 1880, *Palmer 1325*; mountain 4 km. east of Fraile, moist place, fl. purple, *Stanford et al. 357*. ZACATECAS: 15 km. west of Concepcion del Oro, fl. purple, *Stanford et al. 499*.

Ranging from Hidalgo north along the eastern Sierra Madre into our area.

Tradescantia venustula Kunth, Enum. **4**: 87 (1843).

VERNACULAR NAME: Lino de Maiz.

COAHUILA: Near Santo Domingo, limestone hill, *Wynd & Mueller 458*; Santa Anna Canyon, *Marsh 485*; Mesa Grande, 4 km. northwest of Hac. Encantada, *Stewart 1670*; Hillcoast Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1415, 1418*; vicinity of Buena Vista Ranch headquarters, July 14, 1938, *Marsh 2288*; east of La Rosa, dry mountain slope, *Wynd & Mueller 39*; hills 20 mi. west of Saltillo, *Shreve & Tinkham 9825*; Saltillo, *Gregg 250*; Saltillo, 1898, *Palmer 319*; Sierra Madera, Cañon Charretera, *Johnston 9119*; Sierra del Pino, Cañon Ybarra, *Stewart 1245, 1808*; Sierra del Pino, La Noria, *Johnston & Muller 408, 609*; Sierra Cruces, Cañon Tinaja Blanca, *Johnston & Muller 260a*; Picacho de San José, *Stewart 1113*; Sierra Mojada, Cañon Hidalgo, below crest, *Stewart 1097*. CHIHUAHUA: Sierra Diablo, Cañon Rayo, *Stewart 923*; Sierra Diablo, high valley at northwestern end of sierra, *Stewart 979*.

An attractive plant with glabrous glaucescent stems and leaves and pale sky-blue corollas. It favors open rocky hillsides and, though widely distributed in northern Coahuila, is seldom common.

I refer the Coahuilan plant to *T. venustula* with some hesitation. That species was based upon plants grown at Berlin from seeds collected in Mexico by Karwinski. Plants indistinguishable from the Coahuilan plants have been collected by Purpus (no. *5019*) near Minas de San Rafael, S.L.P., and accordingly the species can be expected in northern Hidalgo where Karwinski made extensive collections. Kunth's description of *T. venustula*, except for the flower-color ("sepala . . . interiora in alabastro azurea"), fits equally well either the present plant or the one I have called *T. rhodantha*. The present species, however, has decidedly sky-blue petals, which show this color even in the bud and accordingly differ markedly from the reddish petals of *T. rhodantha*.

Tradescantia rhodantha Torr. Bot. Mex. Bound. 225 (1859).

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 618*; Sierra del Carmen, Sept. 7, 1936, *Marsh 805*. CHIHUAHUA: Sierra Rica, Cañon Madera, cliff crevices, fl. purple, *Stewart 2515*; rocky hills just west of Chihuahua, *Pringle 698*.

This species has reddish or reddish pink flowers and usually glandular hairy pedicels and calyces. It is best known from western Chihuahua and from thence ranges southward at scattered stations to Durango, San Luis

Potosi, and Guerrero. Our plants clearly belong to *T. rhodantha* Torr.; that species, however, may have an earlier name in *T. linearis* Benth.

Commelina diffusa Burm. f. Fl. Ind. 18. *t. 7* (1768).

Coahuila: Carneros Pass area, July 1880, *Palmer 1326.*

An Asiatic species introduced and now widely established in America.

Commelina dianthifolia Delile in Redout. Liliac. 7. *t. 390* (1801).

Coahuila: Sierra del Carmen, Sept. 7, 1936, *Marsh 796;* Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 2273.* Chihuahua: Sierra Rica, Cañon Madera, sunny slopes, *Stewart 2536.*

Widely distributed in Mexico and extending northward along the western Sierra Madre to Arizona, New Mexico, and trans-Pecos Texas.

Commelina erecta L. Sp. Pl. 41 (1753).

Vernacular name: Espuelitas.

Coahuila: Allende, *Marsh 2228;* 11 mi. south of Allende, *Johnston 7011;* Yerda Spring, *Marsh 354, 357, 951;* Muzquiz — La Mariposa, *Marsh 374;* 25 mi. southwest of Sabinas, *Wynd & Mueller 208;* Sierra del Carmen, 10 km. northeast of Hac. Encantada, *Stewart 1560;* Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1477, 1478;* Cañon San Enrique, Sierra Encantada, west of Buena Vista, *Stewart 1365;* Cañon Bocatoche, *Muller 3105;* hills near Mesillas, *Gregg 526;* Sierra del Pino, La Noria, *Johnston & Muller 619;* 12 mi. north of San Rafael, *Stewart 423;* Sierra Cruces, near Santa Elena, *Stewart, Johnston & Muller 246, Stewart 604;* Sierra Cruces, Cañon Tinaja Blanca, *Johnston & Muller 260;* northwest end of Sierra Planchada, *Stewart 1007;* east of Guimbalete, *Stewart 2637;* Tanque Toribio, 30–40 km. north of Colonias, *Stewart 2781.* Chihuahua: 5 km. south of Rancho Encinillas, *Stewart 714;* Cañon Coyote, 20 km. northwest of Santa Fe, *Stewart 2608;* near Trinidad, *Stewart 2584;* near Chihuahua, *Pringle 531;* El Pozo, Sierra Santa Eulalia, *White 2417;* Meoqui, *LeSueur 487;* 12 mi. south of Camargo, *White 2195;* 5 mi. east of Jimenez, *White 2129.*

A plant frequent on flats and on hillsides, in clay or rocky places, commonly sheltered by bushes or cacti and more or less supported by them. A northern species which reaches south into Chihuahua, Coahuila, and Nuevo Leon. The common form in our area is the narrow-leaved var. *angustifolia* (Michx.) Fernald, Rhodora **42:** 439 (1940). Mr. Marsh has collected about Muzquiz, however, a form with broader, thinner, darker green leaves which appears to be referable to typical *C. erecta* L.

Setcreasea brevifolia (Torr.) Pilger in E. & P. Nat. Pflanzenfam. Erganzungsheft **2:** 42 (1906).

Vernacular name: Pollo.

Coahuila: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 624;* Rancho Agua Dulce, Sierra San Manuel, *Wynd & Mueller 335;* Palm Canyon, Muzquiz, *Marsh 356;* Sierra Guajes, Cañon Milagro, shaded canyon-sides, *Stewart 1534a;* Sierra Encantada, high mesa 15 km. northwest of Buena Vista, rocky slopes, fl. orchid, *Stewart 1438;* Sierra Gloria, *Marsh 2220;* Soledad, fl. pink, 1880, *Palmer 2014;* Cuatro Cienegas, *Marsh 2049;* Sierra Hechiceros, Cañon Indio Felipe, cliff-face, fl. lavender, *Stewart 3;* Sierra del Pino, head of Cañon Ybarra, hillside, fl. light pink, *Stewart 1257;* western base of Picacho del Fuste, among loose rocks in deep arroyo, *Johnston 8450;* Picacho de San José, among rocks on open hillside, *Stewart 1109.*

Ranging from the Davis and Chisos Mountains and the lower Pecos River (type locality), in Texas, south into northern Coahuila. A low plant with coarse rhizomes growing among loose rocks or in crevices, usually on sheltered cliffs or north-facing slopes. Usually locally common when present. The corollas are pinkish. In the literature this plant of desert mountains has been confused with **Setcreasea Buckleyi** nom. nov. (*Tradescantia speciosa* Buckley, Proc. Acad. Nat. Sci. Phila. **1862:** 9 [1863], not Linn.), a plant of the coastal area of southern Texas which has a paler corolla and loosely branched elongate trailing stems.

Setcreasea leiandra (Torr.) Pilger almost certainly grows along our northern boundary. It is a trans-Pecos Texan plant known from such stations as the Davis Mts., Chinati Mts., and (at the type-locality in Paysano Pass) near Alpine.

Tinantia erecta (Jacq.) Schlecht. Linnaea **25:** 185 (1852).

CHIHUAHUA: Near Chihuahua, *LeSueur 248;* shade of cliff in mountains southwest of Mapula station, *Pringle 805.*

A tropical species extending northward along the Sierra Madre into Chihuahua.

Commelinantia Pringlei (Wats.) Tharp, Torreya **24:** 52 (1924), Bull. Torr. Bot. Cl. **54:** 337. *t. 26, 27* (1927).

COAHUILA: Sierra del Carmen, Cañon Sentenela, moist stream-side, *Wynd & Mueller 619;* Yerda Spring, *Marsh 950;* Sierra Gloria, *Marsh 1957;* Sierra Guajes, Cañon Milagro, shaded places in deep canyon, *Stewart 1534;* Sierra Hechiceros, Cañon Indio Felipe, shaded crevices on cliffs and along stream, *Stewart 4, 112.*

A very distinct species known only from the mountains of Nuevo Leon and northern Coahuila.

PONTEDERIACEAE

Eichornia crassipes (Mart.) Solms in DC. Monogr. Phan. **4:** 527 (1883).

COAHUILA: Monclova, 1939, *Marsh 2201, 2243.*

A floating aquatic from South America now widely established in the warmer parts of the world.

Heteranthera dubia (Jacq.) MacMill. Metasp. Minn. Valley 138 (1892).

CHIHUAHUA: Rio Conchos at Rosatilla, *LeSueur 564;* Rio Conchos at Camargo, *White 2242.*

A floating aquatic widely distributed in temperate and tropical America.

Heteranthera mexicana Wats. Proc. Am. Acad. **18:** 166 (1883).

COAHUILA: Villa Juarez, on Sabinas River, 1880, *Palmer 1324* (TYPE).

Known only from northeastern Coahuila and adjacent Texas.

Heteranthera limosa (Sw.) Willd. Ges. Nat. Freunde Berlin Neue Schr. **3:** 439 (1801).

COAHUILA: Tanque La Palma, south base of Sierra Hechiceros, in wet mud and standing water, *Johnston & Muller 1281.* CHIHUAHUA: Sierra Hechiceros, near Rancho Encampanada, along stream, *Stewart 193.*

Widely distributed in temperate and tropical America.

BROMELIACEAE

Hechtia texensis Wats. Proc. Am. Acad. **20:** 374 (1885).

Hechtia scariosa L. B. Smith, Contr. Gray Herb. **117:** 20 (1937).

VERNACULAR NAMES: Guapilla; Aguapie.

COAHUILA: Hermanas, *Marsh 1608;* Sierra San Vicente, Cañon Espantosa, *Schroeder 146;* La Pistola, eastern margin of Llano de Guaje, arid limestone hills, *Johnston & Muller 770;* Sierra del Pino, ledges at mouth of southern canyon, *Johnston & Muller 733;* Tanque Jerico, limestone hillside, *Johnston 8337;* western base of Picacho del Fuste, cemented gravels, *Johnston 8447;* Potrero del Cuervo Chico near Tanque Bandido, limestone ledges, *Johnston 8578;* Aguaje Pajarito, west end of Sierra Fragua, rocky slopes and ledges, *Johnston 8716;* Parras, March 1905, *Purpus 1101;* eastern foothills of Sierra Cruces north of Santa Elena, limestone ledges, *Johnston & Muller 324;* Sierra Jimulco, 11 km. northeast of Jimulco, *Stanford et al. 88;* near Jimulco, limestone ledges, *Pringle 72* (type of *H. scariosa*). CHIHUAHUA: Sierra San Carlos, lime-shale ridge near mines, *Johnston & Muller 62.*

The type-locality of this species was given by its discoverer (Havard, Proc. U. S. Nat. Mus. **8**: 478. 1885) as follows: "On the bluffs of the Rio Grande, south of the Chisos Mountains, mixed with Lechuguilla and nearly as forbidding, was collected a new species of a genus not before observed in the United States — *Hechtia texensis,* Watson." Subsequently the plant has been found in various parts of the Big Bend area, apparently always on limestones. The plant is common and widely distributed on sunny limestone ledges and on banks of cemented gravels over most of Coahuila, usually in the company of *Agave lechuguilla* and frequently of *Agave falcata.* The heads of armed leaves grow in crowded clumps. In some old colonies the clumps die out at the center and the heads become arranged in a ring up to a meter or more in diameter. Although the margins of the leaves have very sharp recurved thorns, the tissue of the blade is very juicy and can be chewed for quenching thirst when no other source of water is available.

The species is characterized by its scarious, usually pinkish sepals and bracts, and by its loosely branched inflorescence. It is probably most closely related to *H. elliptica,* of southeastern Coahuila and northern Zacatecas, which differs in its subsimple female inflorescence and firmer stramineous sepals and bracts.

Hechtia elliptica L. B. Smith, Contr. Gray Herb. **117**: 20 (1937).
Hechtia zacatecae L. B. Smith, Contr. Gray Herb. **117**: 21 (1937).

COAHUILA: Saltillo, June 1898, *Palmer 205* (TYPE). ZACATECAS: Cedros, high ridges, *Kirkwood 5* (type of *H. zacatecae*); without locality, 1908, *Lloyd 125.*

This species probably ranges widely along the western base of the Sierra Madre and on the small ranges of the plateau, in southeastern Coahuila, western Nuevo Leon, and northern Zacatecas. It is closely related to the more easterly *H. glomerata* Zucc. and appears to replace that species on the plateau. *Hechtia glomerata,* which has a synonym in *H. Ghiesbreghtii* Lehm. (and probably others in *H. capituligera* Mez, *H. gamapetala* Mez, and *H. mexicana* Smith), ranges from Zapala County, Texas, south in Tamaulipas and Nuevo Leon to Hidalgo. It differs from *H. elliptica* in having smaller capsules and smaller firmer brownish sepals and floral bracts scantily clothed with trichomes. Like *H. elliptica,* and hence differing from *H. texensis,* its female inflorescence consists of a spicate arrangement of dense capitate glomerules. *Hechtia glomerata* may possibly enter our borders in northeastern Coahuila.

Tillandsia recurvata L. Sp. Pl. ed. 2. 410 (1862).

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 589;* Yerda Springs, *Marsh 323;* Sierra Gloria, *Marsh 2007;* Puerto San Lazaro, *Wynd & Mueller 119, Muller 3101;* San Lorenzo Canyon, 6 mi. southeast of Saltillo, shady rock-face, 1904, *Palmer 428;* Sierra Cruces, Cañon Tinaja Blanca, local, *Johnston & Muller 262;* Sierra Cruces, Cañon Encinal, local, *Stewart 2276;* Sierra Jimulco, 11 km. northeast of Jimulco, *Stanford et al. 6.* CHIHUAHUA: Sierra Almagre, local in deep canyon, *Johnston & Muller 1184.* ZACATECAS: Higher canyons, Santa Rosa and Cedros, *Kirkwood 42;* without locality, 1908, *Lloyd 55.*

An epiphyte growing on rocks, cliffs, and trees in canyons and sheltered places. Commonly occurring in great abundance when present, but colonies usually very localized and very widely scattered, and in some areas uncommon or even rare.

JUNCACEAE

by F. J. HERMANN

Juncus mexicanus Willd. in R. & S. Syst. Veg. **7:** 178 (1829).

COAHUILA: Saltillo, large masses in wet bottoms, 1898, *Palmer 201.* CHIHUAHUA: 3 mi. west of Camargo, *White 2278.*

Texas to California and south in Mexico; Chile and Patagonia.

Juncus bufonius L. Sp. Pl. 328 (1753).

COAHUILA: Saltillo, in a ditch, 1898, *Palmer 263.*

Nearly throughout North America; cosmopolitan.

Juncus tenuis Willd. Sp. Pl. **2:** 214 (1799).
Juncus dichotomus Ell. Bot. S. Carolina 406 (1821).
Juncus albicans Fernald, Proc. Am. Acad. **45:** 415 (1910).

COAHUILA: Sierra del Carmen, Sept. 8, 1936, *Marsh 750.* CHIHUAHUA: Outskirts of Chihuahua, a few plants in corn-field, 1908, *Palmer 161* (type of *J. albicans*).

Typical *J. tenuis* is found from Massachusetts and Florida to Texas and Mexico; also in South America from Brazil to Argentina. The type of *J. albicans* is a form intermediate between typical *J. tenuis* and the var. *multicornis* (i.e. *J. macer* S. F. Gray). Such transitional forms are comparatively infrequent in the eastern United States but become more plentiful in the southwest. The auricles in *J. albicans* are intermediate in texture between those of typical *J. tenuis* and the var. *Dudleyi*; the seeds are nearer those of the var. *multicornis* (the shallowly margined areolae averaging four times as broad as long, and about 40 to a vertical row) than to those of true *J. tenuis* (the conspicuously ridged areolae averaging only twice as broad as long, and less than 20 to a vertical row) and are not appreciably longer nor more prominently white-caudate than the average in either typical *J. tenuis* or its var. *multicornis.*

Juncus tenuis var. **Dudleyi** (Wiegand) Hermann, comb. nov.
Juncus Dudleyi Wiegand, Bull. Torr. Bot. Cl. **27:** 524 (1900).

COAHUILA: Sierra del Carmen, Cañon Sentenela, 1936, *Wynd & Mueller 561.*

The cited collection is slightly atypical but may be referred to this variety, which ranges from Newfoundland to Washington and south through central and western United States into Mexico. Although *J. tenuis,* as it occurs in its typical form on the coastal plain of the eastern United States, is readily distinguishable from allied forms, the characters setting it off from those currently separated as *J. Dudleyi* tend to become obscure to imperceptible where the ranges of the two plants merge. This is doubtless the explanation of many of the recurrent reports of "*J. tenuis*" from stations far inland. Specimens from the upper Mississippi Valley, in particular, may frequently have as much in common with *J. tenuis* as they do with *J. Dudleyi;* examples of such intermediates from Indiana are *Deam 54009,* White County; *Kriebel 3451,* Lawrence County; and *Friesner 6038,* Hancock County. Such transitional forms appear sporadically in the east (*Hermann 4344,* Delaware County, Pa., having some auricles almost those of typical *Dudleyi,* some of *tenuis,* and some approaching those of *macer,* and leaf-blades from flat to involute to terete), but become progressively more common westward.

Juncus tenuis var. **multicornis** E. Mey. Linnaea **3**: 371 (1828).
Juncus macer S. F. Gray, Nat. Arr. Brit. Fl. **2**: 164 (1821).
Juncus tenuis of authors, not Willd.

COAHUILA: Sierra Hechiceros, Cañon Indio Felipe, edge of creek, *Stewart 111;* Sierra del Pino, La Noria, moist sand in arroyo, *Johnston & Muller 481, Stewart 1202.*

Ranging almost throughout North America; also in Chile, Argentina, and Brazil. Among the collections cited, *Stewart 1202* is a transitional form approaching typical *J. tenuis.*

Recent study of an extensive series of southwestern collections in §*Poiophylli* shows that the disintegration of the specific line between *J. tenuis* and *J. macer* is as pronounced as that between *J. tenuis* and *J. Dudleyi.* Again illustrations of this may be found in the eastern United States, such as *Nils 8,* from the mouth of the Patuxent River, Md., having some auricles of *tenuis* and some of *macer* and most of the mature seeds those of *macer,* and *True 313,* from Chester County, Pa., having auricles intermediate between *tenuis* and *macer.* The much more numerous intermediates in the western United States appear in various forms. Infrequently one may show the prolonged, scarious auricles of *macer* in combination with the dark olive to brownish green inflorescence and mahogany-brown capsules of *tenuis* (*Demaree 14946,* Drew County, Ark.); but much more common are forms having the inflorescence and capsules of *macer* but the auricles imperceptibly, if at all, prolonged and the sheaths strongly tinted with red at the base. Such transitional forms seem to be the basis of the anomalous *J. dichotomus* var. *platyphyllus* Wiegand, Bull. Torr. Bot. Cl. **30**: 448 (1903).

The unreliability of the characters employed to maintain these plants as specifically distinct from one another becomes patent upon study of a comprehensive series of collections representing the full extent of their known geographic ranges. Thus the leaf-blades in a large proportion of the collections of typical *J. Dudleyi* are terete, either altogether (*Howell 12775,* Trinity County, Calif.) or in part (*Hermann 7944,* Keweenaw County, Mich.), whereas the leaf-blades of "typical" *tenuis* may be absolutely terete throughout, or flat at the base to terete towards the apex, or convolute, or involute, several types being frequently found on a single plant. Likewise the ridges marking off the areolae on the seeds in *J. tenuis,* although very pronounced up to the time of full maturity, tend to become eventually almost as inconspicuous as those in the seeds of *J. macer*; and the differences between the two in relative width and length of the areolae are equally unstable.

For the reasons given, it has seemed desirable to regard both *J. Dudleyi* and *J. macer* as varieties of *J. tenuis.* It is unfortunate that, according to the rules of nomenclature, Meyer's *J. tenuis* var. *multicornis* must be taken up as the proper name for so widespread and common a plant as *J. macer.* Originally applied to a minor ecological or physiological form, it was poorly chosen for the form Meyer had in hand, and it becomes entirely meaningless as an epithet for the broader application in which it must now be used.

Juncus nodosus L. var. **meridianus** Hermann, var. nov.

Planta a varietate typica recedit fructus rostro breviore, 0.5–0.75 mm. longo, valvulis apice non cohaerentibus.

COAHUILA: Saltillo, 1898, *Palmer 264* (US). CHIHUAHUA: Ojo Almagre, Sierra Almagre, wet sand in canyon, locally abundant, tuberous, *Johnston & Muller 1203;* Chihuahua, a few plants in large bunches in moist shady place under overhanging rocks of river bank, 1908, *Palmer 360* (TYPE, U. S. Nat. Herb.); 3 mi. west of Camargo, *White 2268;* Jimenez, wet sandy soil along Rio Florido, *White 2088;* El Cima, June 29, 1936, *LeSueur 1112.* TEXAS: Glenn Springs, Chisos Mts., *Warnock 770* (US); Lower Oak Canyon, Chisos Mts., *Sperry 329* (US); Gano Springs, west of Chisos Mts., *Sperry 401* (US).

Known only from Coahuila, Chihuahua, and the Chisos area in Texas. In typical *J. nodosus,* which ranges across the northern United States and south to Virginia, Illinois, New Mexico, and southern Nevada, the narrowly oblong capsules generally equal the perianth in length, only the long beak, 0.75–1.5 mm. long, being exserted. In the var. *meridianus* the broadly oblong capsules conspicuously exceed the perianth, the short, abrupt beak, 0.5–0.75 mm. long, having its base raised about 1 mm. above the tips of the perianth-segments. The capsule-valves in the var. *meridianus* are less firm in texture than those of typical *nodosus,* are usually pale stramineous in color rather than dark brown, and apparently separate completely immediately upon dehiscence instead of cohering at the apex. The stamens are very frequently reduced to three in the variety, and the rhizomes tend to be more generally and prominently tuberiferous.

Juncus Torreyi Coville, Bull. Torr. Bot. Cl. **22:** 303 (1895).

COAHUILA: Sierra del Carmen, Aug. 9, 1936, *Marsh 647, 745;* Monclova, *Marsh 1648.*

Widely distributed in the United States and south into Coahuila.

Juncus saximontanus Nels. Bull. Torr. Bot. Cl. **29:** 401 (1902).

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 509;* Sierra Hechiceros, Cañon Indio Felipe, water along creek, *Stewart 145.*

Colorado to British Columbia, south to Oregon, Arizona, and New Mexico; extending south in Mexico to Durango and east into northern Coahuila. Of the two collections cited, that from the Sierra del Carmen belongs to the forma *brunnescens* (Rydb.) Hermann, differing from the typical form in having relatively smaller, more numerous, and fewer-flowered heads in the inflorescence.

LILIACEAE

Smilax bona-nox L. Sp. Pl. 1030 (1753).

COAHUILA: Yerda Spring, near Muzquiz, *Marsh 266;* Sierra Gloria, *Marsh 1995.*

A plant of eastern Mexico and eastern United States. Entering our area from adjoining Nuevo Leon.

Asphodelus fistulosus L. Sp. Pl. 309 (1753).

Glyphosperma Palmeri Wats. Proc. Am. Acad. **18:** 164 (1883).

COAHUILA: Saltillo, sandy valleys, 1880, *Palmer 1320* (type of *G. Palmeri*); Saltillo, in roadside ditch, juncoid, dense clumps 1–2½ ft. tall, flowers pinkish, *Johnston 7246.* ZACATECAS: Near Concepcion del Oro, 1902, *Palmer 385.*

Introduced from southern Europe and widely established in central Mexico.

Anthericum Torreyi Baker, Jour. Linn. Soc. **15:** 317 (1876).

COAHUILA: Hillcoat Canyon west of Buena Vista Ranch, July 13, 1938, *Marsh 2285;* Valle de los Guajes, 25 km. south of Buena Vista, grassy flat, not common, erect, fl. orange, *Stewart 1327;* basal slope of low limestone hill on plateau north of Cañon de Cuervo Chico, gravelly places, erect, fl. orange, *Johnston 8566;* limestone hills near La Rosa, *Shreve & Tinkham 9574.* CHIHUAHUA: 16 km. south of Escobillas, silty flat, frequent, erect, fl. yellowish, *Stewart 2362;* Chihuahua, *LeSueur 471, Pringle 666;* 11 mi. northeast of Camargo, silty soil along draw, one plant, fl. orange, *Johnston 7922;* high valley at northwestern end of Sierra Diablo, open hillside and grassy meadows, not common, erect, fl. orange, *Stewart 971.* ZACATECAS: 18 km. west of Concepcion del Oro, on mountain, 18 in. tall, fl. yellow, *Stanford et al. 600.*

The plants referred here have fruits less than 12 mm. (commonly not surpassing 10 mm.) long. The leaves in *Stanford et al. 600* and *Johnston 7922* are 4–6 mm. wide and flat, but the other collections have them conspicuously narrower, usually revolute, and with veins more prominent and crowded. This latter form is typical *A. Torreyi* and is found in western Chihuahua, New Mexico, and western Texas. The material from Arizona and adjacent Mexico, passing as *A. Torreyi,* differs in having the filaments nearly smooth and not conspicuously vesicular-roughened as in typical *A. Torreyi.*

Anthericum stenocarpum Baker, Jour. Linn. Soc. **15:** 317 (1876).

COAHUILA: Sierra del Pino, head of Cañon Ybarra, dry hillside, *Stewart 1259a;* Sierra del Pino, saddle north of high eastern ridge, frequent, crevices, open slopes, fl. orange, *Stewart 2283;* Sierra del Pino, near La Noria, meadows and on terrace along arroyo, *Johnston & Muller 482, Stewart 1220;* escarpment on west side of Potrero de la Mula, rocky places under oaks, fl. yellow, *Johnston 9231;* crest of escarpment west of Potrero de la Mula, moist gravelly places along seepage, *Johnston 9253;* Sierra Gloria, *Marsh 2217;* mountain valley 26 km. northwest of Fraile, 18 in. tall, fl. yellow, *Stanford et al. 423;* San Antonio de las Alanzanas, yellow, 2 ft. tall, frequent, *Gregg 393* (ISOTYPE).

A plant of the oak and pine belts characterized by its coarse habit, large strict capsules (13–20 mm. long), and broad flat leaves. It is also known from the Sierra Madre of Nuevo Leon and Tamaulipas. Watson, Proc. Am.

Acad. **18:** 164 (1883), reports the species from Lirios, Coahuila (*Palmer 2012*).

Anthericum leptophyllum (Benth.) Baker, Jour. Linn. Soc. **15:** 317 (1876).

COAHUILA: Near Saltillo, Sept. 1898, *Palmer 327*.

The above collection may be only a phase of *A. Torreyi,* but it very much resembles the type collection of *A. lepidophyllum,* from Aguas Calientes. This latter species is close to the more northern *A. Torreyi,* differing in its shorter, somewhat firmer, scabridulous leaves, which at anthesis seem to be less well developed than in *A. Torreyi.*

Hemiphylacus latifolius Wats. Proc. Am. Acad. **18:** 164 (1883).

COAHUILA: Mountains 6 mi. east of Saltillo, 1880, *Palmer 1319* (TYPE); Chojo Grande, 27 mi. southeast of Saltillo, gravelly openings in canyon, leaves quite fleshy, Aug. 1904, *Palmer 367;* rolling hills 11 km. northeast of Jimulco, fl. white, tubers 1–2½ in. long, *Stanford et al. 79*.

Known also from San Luis Potosi and Oaxaca. A very coarse broad-leaved herb with unusual sausage-shaped tubers.

Zigadenus virescens (H.B.K.) Macbr. Contr. Gray Herb. **53:** 4 (1918).

COAHUILA: Carneros Pass area, 1880, *Palmer 1321;* Carneros Pass, *Pringle 2827;* ? Hillcoat Mesa west of Encantada Ranch, July 25, 1938, *Marsh 1473*.

Widely distributed in the mountains of Mexico.

Schoenocaulon Coulteri Baker, Jour. Linn. Soc. **17:** 477 (1879).

Schoenocaulon intermedium Baker, Jour. Linn. Soc. **17:** 477 (1879), as to *Coulter 1568*.

Schoenocaulon macrocarpum Brinker, Ann. Mo. Bot. Gard. **29:** 300 (1942).

COAHUILA: Mountain-border near Saltillo, frequent, 2 ft. tall, root used for snuff, June 25, 1848, *Gregg 214;* high western end of Sierra Fragua north of Puerto Colorado, rocky soil under pines on east slopes, frequent, 12–30 in. tall, corolla yellowish green, *Johnston 8754;* Sierra del Pino, dry rocky slope at lower edge of pine-oak belt below La Noria, local, *Johnston & Muller 421;* Sierra Mojada, Cañon Hidalgo, about cliffs in shady canyon below the crest, not common, erect, fl. white, *Stewart 1070*. CHIHUAHUA: Sierra Santa Eulalia, 1885, *Pringle 40;* 14 km. up Cañon Rayo, northeast end of Sierra Diablo, shade of bushes on arroyo bank, not common, fl. white, *Stewart 925*.

Ranging in our area and in the mountains of eastern Mexico south at least to Hidalgo (type from Zimapan); apparently also in the Guadalupe Mts. of western Texas and adjoining southeastern New Mexico. The species much resembles and is closely related to *S. Drummondii* and especially *S. texanum* of Texas, differing from them in its more southern range and extremely fibrous bulb-coats. The bulbs of the Texan plants have friable papery coats and are persistently fibrous only at the neck where they project from the soil. The usually more elongate and deeply buried bulbs of *S. Coulteri* have extremely fibrous coats. The outer coats disintegrate in age and the older bulbs become thickly invested by very abundant coarse dark-colored fibers. Though *S. intermedium* Baker has page priority over *S. Coulteri* Baker, I am taking up the latter name since it was based entirely on *Coulter 1569,* which clearly represents the present concept. *Schoenocaulon intermedium* is founded on *Coulter 1568,* representative of our concept, and *Coulter 1570,* representative of *S. caricifolium* (Schlecht.) Gray.

I have been unable to follow the classification of *Schoenocaulon* recently proposed by Brinker, Ann. Mo. Bot. Gard. **29:** 283–316 (1942). His classification is decidedly unconvincing. His key is short, artificial, and not successful. Though he proposes many new species, his descriptions are cursory and the individual species have no discussion or explanation. Suspicion is immediately aroused by the lack of geographical segregation among the very obviously closely related species he recognizes, as also by their lack of conformity to the familiar patterns of geographical distribution followed by most groups of Mexican plants. This is well exemplified by his classification of the species of the Pacific Coast of Mexico, probably all conspecific and properly called *S. calcicola* Greenm., which he has broken up into *S. calcicola* Greenm., *S. jaliscense* Greenm., *S. megarrhiza* Jones, *S. regulare* n. sp., *S. tenue* n. sp., and *S. Mortonii* n. sp. Material of *S. Coulteri,* as I have defined it, Brinker classifies under *S. Coulteri, S. Drummondii* Gray, *S. macrocarpum* n. sp., and *S. texanum* Scheele. The bulb coats quickly distinguish *S. Coulteri* from *S. Drummondii* and *S. texanum.* Brinker's *S. macrocarpum* is a synonym of *S. Coulteri. Schoenocaulon caricifolium* (Schlecht.) Gray, which has a synonym in *S. comatum* Brinker, is a plant of east-central Mexico, more closely related to the plant of western Mexico than to *S. Coulteri.* From *S. Coulteri* it is readily distinguished by its more slender spike of smaller flowers and its stouter usually longer pedicellate spreading capsules.

Milla biflora Cav. Icon. Pl. **2:** 76 (1793).

VERNACULAR NAMES: Mayo blanco; Flor de Mayo; Estrellas.

COAHUILA: Sierra Hechiceros, gravelly flat at head of Cañon Madera, locally common, *Johnston & Muller 1298.* CHIHUAHUA: Sierra Hechiceros, Rancho Encampanada, abundant on sunny hillside, white, 4 dm. tall, *Stewart 199;* near Rancho El Pino, 10 km. southeast of Sierra Rica, open sunny slope, frequent, fl. white, *Stewart 2562;* 4 km. east of Tepopote, silty flat, scarce, erect, fl. white, *Stewart 2365;* Pirámide, base of rock-masses, *Johnston 8150;* high valley at northwestern end of Sierra Diablo, sunny open hillsides, not common, erect, fl. white, *Stewart 965;* 31 mi. southeast of Jimenez, scattered on grassy desert valley, fl. white with green stripe down outside of each lobe, *Muller 3338;* plains near Chihuahua, *Pringle 660.*

Ranging from central Mexico northward along the western Sierra Madre to Sonora, Chihuahua, and southeastern Arizona.

Milla Bryani Johnston, Jour. Arnold Arb. **24:** 90 (1943).

VERNACULAR NAME: Sebollin.

COAHUILA: West base of Picacho del Fuste, north-facing slope about limestone rocks, common, fl. white with green lines, *Johnston 8364;* near head of Cañon del Cuervo Chico, rocky slopes and crests of limestone, 1–3 ft. tall, perianth white with green stripe, *Johnston 8529* (TYPE); Sierra Madera, Cañon Charretera near La Cueva, grassy openings in oak thickets, rocky flat, fl. white, *Johnston 9123;* Sierra Madera, mouth of Cañon del Agua, abundant among desert shrubs in foothills, fl. white, *Muller 3203;* high western end of Sierra Fragua north of Puerto Colorado, opening among brush and pines on ridge, 2–3 ft. tall, not common, corolla white with greenish stripe, *Johnston 8777;* Rancho La Botica, Valle Delicias, open slopes, erect, 3 dm. tall, fl. white, *Stewart 2848, 2898.*

An endemic species closely related to *M. biflora* and replacing it in the limestone mountains of central Coahuila. Differing from its relative in its more elongate and slender corolla and exserted filaments.

Nothoscordum bivalve (L.) Britt. in Britt. & Br. Ill. Fl. N. U. S. **1**: 415 (1896).

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 589;* Sierra Gloria, *Marsh 1929;* Monclova, 1880, *Palmer;* Sierra Hechiceros, El Tule, damp soil in arroyo, fairly common, erect, fl. white, *Stewart 499;* dry steep canyon 5 km. northeast of Jimulco, *Stanford et al. 121.* CHIHUAHUA: Sierra Hechiceros, Rancho Encampanada, 1940, *Stewart.* ZACATECAS: Concepcion del Oro, exposed mesas among thorny and scrubby plants, 1904, *Palmer 270.*

Widely distributed in Mexico and eastern United States.

Muilla Purpusii Brandeg. Univ. Calif. Publ. Bot. **4**: 177 (1911).
Bloomeria Purpusii (Brandeg.) Macbr. Contr. Gray Herb. **56**: 9 (1918).

COAHUILA: Sierra de la Paila, Oct. 1910, *Purpus 4859* (ISOTYPE).

A bulbous plant bearing a slender scape terminating in an umbel of small blue flowers. The species is known only from the type collection. Its generic position is uncertain.

Allium cernuum Roth in Roem. Arch. **1**^{3}: 40 (1798).

COAHUILA: Sierra del Carmen, Aug. 26, 1936, *Marsh 609.*

Widely distributed in United States and extending south into northern Mexico. Our material belongs to the southwestern variant which has been called *A. neomexicanum* Rydb.

I am indebted to Prof. Marion Ownbey for identification of the specimens of *Allium* cited in the present paper.

Allium Drummondii Regel, Act. Hort. Petrop. **3**^{2}: 112 (1875).

COAHUILA: Valley of the Rio Grande near Piedras Negras, April 20, 1900, *Pringle 9185;* Burro Mts., *G. Jermy 170.*

Kansas south through Texas and southeastern New Mexico to Coahuila.

Allium glandulosum Link & Otto, Icon. Rar. **1**: 33. *t. 17* (1828).

CHIHUAHUA: Cañon Madera, southeastern flank of Sierra Rica, frequent on talus slope 5 km. up canyon, oak-pinyon belt, *Stewart 2532.*

Widely distributed in Mexico. Prof. Ownbey states that the species differs from *A. Kunthii* in having slender fleshy rhizomes produced from the base of the bulbs, and adds that perhaps *A. rhizomatum* Woot. & Standl., from New Mexico, may be a synonym of the species.

Allium Kunthii Don, Mem. Wern. Soc. **6**: 82 (1827).

VERNACULAR NAME: Cebolla cimarron.

COAHUILA: Western slope of Sierra del Carmen, 10 km. east of Hac. Encantada, open hillside, *Stewart 1690;* Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1456;* Cañon Madera, Sierra Guajes, east of Rancho Buena Vista, hillside, *Stewart 1290;* high mesa in the Sierra Encantada, 16 km. northwest of Rancho Buena Vista, rocky hillside, *Stewart 1441;* Sierra Gloria, *Marsh 1930;* Soledad, 1880, *Palmer 2010;* 24 km. northwest of Fraile, burnt-off south slope, *Stanford et al. 411;* west base of Picacho del Fuste, north-facing limestone slope, *Johnston 8376;* Cañon del Cuervo Chico, rocky bank in open canyon, *Johnston 8522A;* Sierra Madera, Cañon Charretera, stony open place on canyon floor, *Johnston 9151;* Sierra Madera, Cañon del Agua, abundant among desert shrubs in foothills at canyon-mouth, *Muller 3204;* high western ridge of Sierra Fragua, north of Puerto Colorado, gravelly places along crest, *Johnston 8743;* limestone ridge in foothills of Sierra Cruces, west of Santa Elena, *Johnston 8194;* Picacho de San José, dry open hillside, *Stewart 1107*. CHIHUAHUA: Cañon del Rayo, northeastern side of Sierra Diablo, silty slope, *Stewart 858;* Portrero Mts., east of Mapula station, summit, Sept. 10, 1886, *Pringle 803*. ZACATECAS: Cedros, Aug. 1908, *Lloyd 198*.

Western Texas and New Mexico south to southern Mexico. Growing in rocky soil in sunny places in canyons and on ridges, usually in local colonies. Corolla white to pink.

Calochortus barbatus (H.B.K.) Painter, Contr. U. S. Nat. Herb. **13:** 348 (1911).

Calochortus barbatus subsp. *chihuahuanus* Painter, Contr. U. S. Nat. Herb. **13:** 349 (1911).

Calochortus barbatus var. *chihuahuanus* Macbr. Contr. Gray Herb. **59:** 28 (1919).

CHIHUAHUA: Sierra Santa Eulalia, summits, 1885, *Pringle 328* (isotype of var. *chihuahuanus*).

The species usually has yellow petals. The plant from Santa Eulalia has purplish petals and has been distinguished as var. *chihuahuanus*.

Nolina cespitifera Trel. Proc. Am. Philos. Soc. **50:** 419 (1911).

COAHUILA: Valle de los Guajes, 20 km. south of Buena Vista, grassy flat, *Stewart 1338;* western base of Sierra Guajes, 8 km. east of Buena Vista, igneous hillside, *Stewart 1456;* Sierra del Pino, near La Noria, rocky slopes and arroyo bottom in pine-forest, *Johnston & Muller 595;* Sierra Madera, Cañon Charretera, openings in oak-thickets on flats and in broad arroyos, *Johnston 8956;* western end of Sierra Fragua, north of Puerto Colorado, high ridge with pines on steep rocky brushy slopes, *Johnston 8771;* Buena Vista battlefield, May 21, 1847, *Wislizenus 308* (Mo, TYPE); near Saltillo, high dry lands, Dec. 25, 1847, *Gregg 81;* Carneros Pass area, July 1880, *Palmer;* 3 km. southwest of Fraile, in arroyo, stalks 18 inches tall, *Stanford et al. 343*. CHIHUAHUA: Sierra Rica, Cañon Madera, dry open slopes, *Stewart 2533*.

Known only from our area and from the vicinity of Galeana in the Sierra Madre of Nuevo Leon. The inflorescence becomes 4–9 dm. tall and commonly does not much surpass the large rosette of leaves. The axis and branches of the panicle, especially in the more southern material, may be very much roughened by epidermal protuberances. The capsule, in size, shape, and dehiscence, is much like that of *N. texana* and, as in that species, is soon ruptured, exposing the maturing seeds. The lobes of the ruptured capsule are conspicuously stained with red.

The species is to be confused only with *N. erumpens,* from which it may be readily distinguished by its somewhat yellowish, rather than grayish, green leaves, usually roughened branches of the inflorescence, and smaller soon-dehiscent capsules conspicuously reddish at the base. Its broad leaves quickly separate it from *N. texana* and *N. micrantha.*

Nolina erumpens (Torr.) Wats. Proc. Am. Acad. **14:** 248 (1879).

COAHUILA: Sierra del Carmen, Sept. 7, 1936, *Marsh 810;* near Santo Domingo, limestone hill, *Wynd & Mueller 462;* Hillcoat Canyon, west of Buena Vista Ranch, July 13, 1938, *Marsh 1291*. CHIHUAHUA: Rocky slope of mountains 2–3 mi. east of Virulento, inflorescence 4 ft. tall, *Johnston 8064*.

Known only from trans-Pecos Texas (western Terrell to southern Hudspeth Counties) and south into our area. Torrey appears to have based the species on *Wright 1918,* a collection apparently composed of material from southern Hudspeth Co. and from eastern Jeff Davis Co., Texas. Torrey's description calls for leaves 6 mm. wide and rounded (semiterete) beneath and seeds bursting the capsules and long persistent. These details, and the specific name, apply to *N. texana*. The material of *Wright 1918* at St. Louis and Cambridge, however, is characteristic *N. erumpens* as currently accepted, with broad flat leaves and seeds filling but not bursting the somewhat angulate and inflated pods. Possibly Torrey's species has been misinterpreted. Because of war conditions, however, I have been unable to examine the type of *N. erumpens*.

Nolina microcarpa Wats. Proc. Am. Acad. **14:** 247 (1879).

Nolina durangensis Trel. Proc. Am. Philos. Soc. **50:** 421 (1911).

CHIHUAHUA: Rocky hills near Chihuahua, 1885, *Pringle 159;* vicinity of Chihuahua, stony bluffs and hills, flowering stems 5–6 ft. tall, 1908, *Palmer 355.*

Ranging from southern Arizona and New Mexico south into Durango. One of the broad-leaved species having a large elongate inflorescence with internodes 4–8 cm. long. The papery long-pedicellate fruits open along the sutures and are not disrupted by the growing seeds.

Nolina texana Wats. var. **compacta** (Trel.) Johnston, Jour. Arnold Arb. **24:** 90 (1943).

Nolina affinis Trel. Proc. Am. Philos. Soc. **50:** 417 (1911).

Nolina caudata Trel. Proc. Am. Philos. Soc. **50:** 417 (1911).

Nolina erumpens compacta Trel. Proc. Am. Philos. Soc. **50:** 418 (1911).

CHIHUAHUA: Below the Sandhills [betw. Candelaria and Lucero] on the El Paso-Chihuahua City road, Aug. 17, 1846, *Wislizenus 219* (Mo, excluding the leaf ?); rocky hills near Chihuahua, "fruit and leaves, May," 1885, *Pringle 2* in pt. (GH); rocky hills near Chihuahua, April–May, 1885, *Pringle 1 & 2* (Mo, type of *N. affinis*).

Ranging from trans-Pecos Texas west to southeastern Arizona and south into Chihuahua. A sheet at St. Louis, labeled as composed of *Pringle* no. *1* and no. *2,* bears Trelease's designation as type of his *N. affinis*. Although Trelease cited some collections of *N. micrantha* when he published his *N. affinis,* his designated type-specimen entirely represents *N. texana* var. *compacta*. As is very unusual in Pringle's superb collections, his specimens of *Nolina* numbered *1* and *2* (the first numbers in his famous set of Mexican exsiccatae) seem to be mixtures of two species. In his published diary he mentions collecting material for his no. *1* in Bachimba Canyon (i.e. between Mapula and Horcasitas stations, 20–35 km. southeast of Chihuahua) on April 2, 1885, and again on April 4, "on ledges northeast of house" on the northeastern outskirts of Chihuahua. He mentions collecting *Nolina* no. *2* in Bachimba Canyon on May 22. I suspect that the material obtained on the outskirts of Chihuahua and that obtained in Bachimba Canyon were different species, one being *N. texana* var. *compacta* and the other *N. micrantha*. Flowering and fruiting material of both species were distributed mixed under the two numbers.

Nolina micrantha Johnston, Jour. Arnold Arb. **24:** 91 (1943).

COAHUILA: Sierra Hechiceros, vicinity of Rancho El Tule, rocky slopes and flats, *Johnston & Muller 1326* (TYPE), *Stewart 490.* CHIHUAHUA: Sierra Hechiceros, Rancho Encampanada, sunny hillside, *Stewart 193;* Organos, base of grassy oak-clad hills, *Stewart & Johnston 2072;* rocky hills near Chihuahua, May 1885, *Pringle 2* in pt.; vicinity of Santa Eulalia, common on stony hills and mesas, 1908, *Palmer 139.*

An endemic species with thick narrow leaves resembling those of *N. texana.* It is probably most closely related to *N. texana,* but differs in its distinctly smaller flowers, larger looser inflorescence with less rigid, less twiggy, more slender and elongate branches, purpurascent capsules, and minute less lacerate bractlets.

Dasylirion cedrosanum Trel. ex Lloyd, Publ. Carnegie Inst. **139**: 23 (July 1911); Trel. Proc. Am. Philos. Soc. **50**: 431 (Aug. 1911).

Dasylirion Palmeri Trel. Proc. Am. Philos. Soc. **50**: 432 (1911).

? Dasylirion texanum aberrans Trel. Proc. Am. Philos. Soc. **50**: 434 (1911).

VERNACULAR NAMES: Sotol; Cortadilla; Sotol cenizo.

COAHUILA: Mouth of Cañon de la Cruz, 20 km. south of Ocampo, common, *Johnston 9182;* vicinity of Aguaje Pajarito at west end of Sierra Fragua north of Puerto Colorado, common, *Johnston 8720;* Monclova, 1880, *Palmer 1315* (Mo, photo of type of *D. texanum aberrans*); Puerto San Lazaro, 1936, *Wynd & Mueller 165;* Rancho La Luz, Sierra de la Paila, April 22, 1905, *Endlich 7* (Mo); San Lorenzo Canyon, southeast of Saltillo, 1905, *Palmer 696* (type of *D. Palmeri*); near Saltillo, Dec. 25, 1847, *Gregg 78.* ZACATECAS: Near Cedros, foothills, June 1908, *Lloyd 118* (Mo, TYPE); Cedros, June 1908, *Kirkwood 96* (Mo, GH), *Lloyd 82* (Mo).

A coarse plant with large, dull, rarely glaucescent leaves 20–25 mm. wide bearing stout antrorsely curved marginal thorns. The species is known only from our area.

Dasylirion Stewartii Johnston, Jour. Arnold Arb. **24**: 92 (1943).

Dasylirion Stewartii var. *glaucum* Johnston, Jour. Arnold Arb. **24**: 93 (1943).

VERNACULAR NAME: Sotol.

COAHUILA: Vicinity of Santa Elena, eastern foothills of Sierra Cruces, common, *Stewart 823* (TYPE), *841;* 7 mi. north of Santa Elena, *Johnston & Muller 331;* 3 mi. northwest of El Oro on road to Esmeralda, *White 1970.* CHIHUAHUA: Mouth of Cañon del Rayo, Sierra Diablo, *Stewart 957* (type of var. *glaucum*).

A coarse plant much resembling the more southern and eastern *D. cedrosanum,* from which it differs by having the stout curved marginal thorns of the leaves retrorse rather than antrorse. The typical form of the species in the Sierra de las Cruces has dull green leaves. Collections from the Sierra Mojada and Sierra Diablo, further south, have very pale glaucous leaves and have been described as var. *glaucum.*

Dasylirion texanum Scheele, Linnaea **23**: 140 (1850).

VERNACULAR NAME: Sotol.

COAHUILA: Monclova, Aug. 1880, *Palmer 1315;* Sierra del Pino, abundant on dry rocky slopes and crests along high eastern ridge east of La Noria, scape 8–15 ft. tall, *Johnston & Muller 657.*

A species with narrow (up to 15 mm. wide) lustrous green leaves with sharp antrorse marginal thorns. This is a plant centering on the Edwards Plateau and probably entering Coahuila from the northeast.

Dasylirion heteracanthum Johnston, Jour. Arnold Arb. **24**: 92 (1943).

VERNACULAR NAME: Sotol.

COAHUILA: Western base of Picacho del Fuste, frequent on rocky slopes and flats, *Johnston 8428* (TYPE).

This species is closely related to both *D. texanum* and *D. leiophyllum* and grows in an area between these two species; possibly it intergrades with both of them. It is known from the Big Bend area of Texas and the area eastward to the lower Pecos. It differs from its relatives in its somewhat broader, usually non-lustrous leaves with usually straight divaricate marginal thorns. Occasional thorns on the leaf-margins may be weakly curved, but the thorns are not like cats-claws and neither antrorse as in *D. texanum* nor retrorse as in *D. leiophyllum*.

Dasylirion leiophyllum Engelm. ex Trel. Proc. Am. Philos. Soc. **50**: 433 (1911).

CHIHUAHUA: Sierra Santa Eulalia, 1885, *Pringle 149;* northwest of Chihuahua, *LeSueur 565;* vicinity of Chihuahua, 1908, *Rose 11682* in pt. (Mo).

A plant with narrow lustrous green leaves 14–19 mm. wide, armed with stout recurved marginal thorns. The type was collected at Presidio by Havard in 1880. In Texas the species ranges from Presidio and Jeff Davis Counties westward along the mountains near the Rio Grande and is reported as extending into the mountains of southeastern New Mexico. Information regarding its distribution in Chihuahua is fragmentary. I have observed the plant on limestone slopes near Charca de Peña, about 120 km. east of Chihuahua. I saw no plants of *Dasylirion* during my journey by railroad from Chihuahua to Ojinaga, although numerous limestone mountains were seen on which it might be expected. Most of central eastern Chihuahua being composed of volcanic rocks, it is not surprising that *Dasylirion* is absent in that area.

Dasylirion Wheeleri Wats.; Rothrock in Wheeler, Rep. U. S. Surv. 100th Meridian **6**: 378 (1878).

Dasylirion durangensis Trel. Proc. Am. Philos. Soc. **50**: 438 (1911).

Dasylirion Wheeleri Wislizeni Trel. Proc. Am. Philos. Soc. **50**: 439 (1911).

CHIHUAHUA: Near Lake Santa Maria, 1899, *Nelson 6392.*

Ranging from southern Arizona and New Mexico south in the highlands of Chihuahua and Sonora to Durango. Trelease reports his *D. Wheeleri Wislizeni* from the mountains near El Paso and adjoining Chihuahua to the south. The species has leaves usually 15–20 mm. wide armed with stout antrorse marginal thorns. The typical Arizona plant has pale foliage. The New Mexican material appears to be usually green. The large, broadly winged, usually deeply notched fruits have a conspicuous pedicel. The staminate clusters are usually evidently pedunculate. The evident pedicels and peduncles are useful characters in distinguishing the species.

Dasylirion Berlandieri Wats. Proc. Am. Acad. **14**: 249 (1879).

COAHUILA: Angostura, south of Saltillo, May 21, 1847, *Wislizenus 307* (Mo).

The cited specimen is a poor one, but it may represent *D. Berlandieri,* or possibly juvenile *D. cedrosanum. Dasylirion Berlandieri* ranges in the Sierra Madre of Nuevo Leon from near Monterey south at least to the Galeana area and can be expected within the Coahuilan borders. It has dull green leaves, 15–30 mm. wide, with numerous small relatively weak antrorse marginal thorns. Its broadly winged deeply notched fruit tends to be broader than long.

Hesperaloe funifera (Koch) Trel. Rep. Mo. Bot. Gard. **14:** 36. *t. 3–4* (1902).

VERNACULAR NAME: Samandoque.

COAHUILA: Allende, 1939, *Marsh 1751;* Valle de los Guajes, 14 km. south of Rancho Buena Vista, colony on grassy flat, *Stewart 1345;* near Rancho Santa Teresa, south of Castaños, *Wynd & Mueller 187;* Monte de San Vicente, below Cañon Espantosa, southeast of Cuatro Cienegas, *Schroeder 167;* several miles west of Buena Vista [west of Puerto Caballo], silty grassy flat, clumps scattered, *Johnston 8313;* about 15 km. east of San Antonio de los Alamos, brushy flats, local colony, *Johnston 8294;* Cerro del Cypriano, near Mohovano, June 1910, *Purpus 4508.*

A yucca-like plant growing on clay and stony flats and on gentle slopes along the base of sierras. It appears to favor moderately gypsiferous soils and possibly because of this fact usually grows on Upper Cretaceous beds or on outwash near them. Though the species occurs over a large area, its distribution is discontinuous and seemingly erratic. It may be present, scantily or in local abundance, and then absent for considerable distances. In addition to stations represented by specimens cited, it has been observed also in the area south of Peyotes, south of Laguna de Leche, north of Puerto Colorado, near Matrimonio, and on the Atravasada between El Oro and Esmeralda. South of our area it has been collected about 150 km. east of San Luis Potosi, at Hacienda de Angostura, a distant area sharing a large number of peculiar plants with the area about Cuatro Cienegas. It has been reported in cultivation, for its fibers, at Bustamente in the mountains of southwestern Tamaulipas. Various stations for the species are known in northern Nuevo Leon.

It is a plant of distinctive appearance. It is acaulescent and its large, erect, usually clustered rosettes are composed of relatively few, strictly ascending, stiff, elongate leaves 1–1.8 m. long. The leaf-blades are concavo-convex, lustrous and beautifully lineate-grooved beneath and very stiffly and coarsely fibrous on the margins. The slender-stemmed inflorescence becomes 3 m. tall, with the upper two-fifths bearing a few slender divaricate branches 3–12 dm. long. The small nearly rotate corolla is greenish yellow or slightly stained with purple.

Yucca Torreyi Shafer in Britton & Shafer, No. Am. Trees 157 (1908); McKelvey, Yuccas of S.W. U. S. **1:** 104–117. *t. 52–58* (1938).

Yucca baccata var. *macrocarpa* Torr. Bot. Mex. Bound. 221 (1859).

Yucca macrocarpa (Torr.) Merriam, No. Am. Fauna **7:** 358 (1893); Trel. Rep. Mo. Bot. Gard. **13:** 110. *t. 70–71* (1902); not *Y. macrocarpa* Engelm. (1881).

VERNACULAR NAMES: Palma China; Palma de San Juan; Palma de Pita; Palma criolla; Palma cenisa; Palma loca.

COAHUILA: Muzquiz, *Marsh 1162;* 20 mi. north of Hipolito, on desert, *Wynd & Mueller 67;* flats of La Vega, about 15 km. southeast of Cuatro Cienegas, *Schroeder 84;* foothills of Sierra Cruces, near Santa Elena, frequent, *Johnston & Muller 332.*

This species centers in our area and extends north across the Rio Grande into western Texas and adjoining New Mexico. It has been reported as far south as San Juan de Guadalupe, in the easternmost corner of Durango. The plant grows in limestone as well as igneous areas, and is found among desert scrub in the broad valleys, scattered in grasslands, occasional on rough basaltic slopes, but best developed in the foothills of limestone mountains, where, in the company of *Yucca carnerosana* and *Dasylirion,* it is frequently rather common. It occurs at much lower altitudes than *Y. carnerosana* and does not ascend as high in the mountains. It usually grows singly or in small groups and scattered, and it never forms great congregations, the so-called "Palmares," as does *Y. carnerosana*.

It is usually an unkempt plant, commonly 3–5 m. tall, normally with several simple trunks. These trunks, thatched with reflexed dead leaves, bear an elongate, rather untidy head of stiff sword-like grayish leaves. The leaves of *Y. carnerosana* radiate from a hemispherical axis, forming a tidy symmetrical globose cluster. The axis of *Y. Torreyi* is elongate, and the head of leaves is distinctly longer than broad. Its leaves do not spread regularly and the leaf-cluster is usually confused and untidy because of seemingly crossed leaves and lack of perfect symmetry. Compared with the trim dignified plants of the aristocratic *Y. carnerosana*, those of *Y. Torreyi* seem disheveled and somewhat ill-nourished, though individually more interesting because their form of growth is less stereotyped.

Exploration has shown that *Y. Torreyi*, formerly known only from western Texas (the type came from the Davis Mts.), is generally distributed in Coahuila and eastern Chihuahua south into northeastern Durango and northern Zacatecas. Southern plants of *Y. Torreyi* have the appearance and behavior of the plants along the Rio Grande and are obviously conspecific with them. Trelease, however, while maintaining *Y. Torreyi* (under the name *Y. macrocarpa*) as a valid species in trans-Pecos Texas and adjoining Mexico, failed to recognize that the species extends into the southern and eastern portions of our area. Plants from these latter portions of our area Trelease identified as typical *Y. Treculeana*. Mrs. McKelvey, l.c., p. 75, has shown that true *Y. Treculeana* is the plant of southern Texas, Tamaulipas, and eastern Nuevo Leon which Trelease called *Y. Treculeana* var. *canaliculata*. She has also shown that the plants of Texas, in the area between Uvalde and the mouth of the Rio Pecos, adjoining northeastern Coahuila, which Trelease included in the typical variety of "*Y. Treculeana*," are also referable to *Y. Torreyi*. *Yucca Treculeana* possibly may enter Coahuila on the Rio Grande Plain in the very extreme northeastern portions of the state. The Coahuilan plants, however, which Trelease and others have called "*Y. Treculeana*" probably all belong to *Y. Torreyi*.

Yucca carnerosana (Trel.) McKelvey, Yuccas of S.W. U. S. **1**: 24 (1938).
Samuela carnerosana Trel. Rep. Mo. Bot. Gard. **13**: 118. *t. 76–81* (1902).

VERNACULAR NAMES: Palma de San José; Palma de San Pedro; Palma barreta; Zamandoque.

COAHUILA: Sierra del Pino, abundant on hillsides and valleys, *Johnston & Muller 712;* eastern foothills of Sierra Cruces near Santa Elena, common, *Johnston & Muller 1013;* near Saltillo, 1898, *Palmer 197;* mouth of San Lorenzo Canyon, southeast of Saltillo, 1903, *Dewey 578* (US); Carneros Pass, limestone hillsides, *Pringle 3912* (ISOTYPE); Carneros Pass, 1900 and 1905, *Trelease 58, 167* (Mo). ZACATECAS: Cedros, hills and foothills, *Lloyd 35* (US); Mazapil, *Lloyd 35* (Mo).

A common and characteristic plant of rocky limestone soils on the plateau from the Big Bend area in Texas south into San Luis Potosi, and a familiar feature on mountain-sides and in open mountain valleys up into the lower parts of the Oak Belt. It may occur, sometimes abundantly, on rocky pediment slopes along the mountains, but probably it rarely descends below 4000 ft. altitude. It is the most conspicuous element in that characteristic zone of vegetation on limestone sierras of western Coahuila, appropriately called the "Palma Belt."

The trunk becomes 2–4 m. tall and rarely even taller, and, though several may spring from the ground together, they are seldom branched. The stout trunk is commonly clothed with reflexed dead foliage and above bears a large trim globose cluster of rigid radiating sword-like leaves. It is said to flower in April and May.

The species is probably present on most limestone mountains of Coahuila except some in the eastern portions of the state. Its exact eastern limit has not been determined. Mr. Stewart reports that it is abundant on the western slopes of the Sierra del Carmen near Hacienda Encantada. Farther south I have seen it near La Mula and in the foothills of the Sierra Madera south of Ocampo. It is said to be abundant in the Sierra de la Paila. The large yuccas growing in oak-thickets along the crest of the high ridge just east of Saltillo, along the steep grade to Diamante, probably belong to the species. It is to be expected elsewhere along the western flank of the Sierra Madre. In southern Coahuila it is present, frequently in great abundance, in the east-west mountain ranges from Carneros Pass (the type locality) west to the extremity of the Sierra de Parras southwest of Parras. It is reported as common in extreme northeastern Zacatecas, at least as far west as Cedros, and Endlich, Beiheft z. Tropenpflanzer **9:** 248 (1908), reports it from the Sierra de Ramires, farther west, within the extreme eastern corner of Durango. Farther north in northeastern Durango I know it from the area about Mapimi, and westward, along the road to Palmito Dam, on the mountains about Cadena and some miles beyond.

Information regarding the distribution of the species in Chihuahua is very incomplete. Near the Coahuilan border in extreme southeastern Chihuahua the plant is known from the Sierra Almagre and the Sierra Diablo. The middle portion of eastern Chihuahua is largely composed of igneous rocks on which *Y. carnerosana* is absent. Farther north, however, there are limestones. I have seen the plant in the Sierra San Carlos, in the hills 10 miles south of Mula, and along the road northwest from Castillon, Coah., as far west as Tascate. Along the railroad between Chihuahua City and Ojinaga a yucca with the familiar habit of the Coahuilan plant is common on all limestone mountains northeast of Las Trancas. The limestone mountains in this portion of Chihuahua have a north-south orientation and extend in broken chains north to the Rio Grande. The large yucca seen on the various sierras northeast of Las Trancas, accordingly, can be expected to range north to the Rio Grande and should therefore approach the range of *Y. Faxoniana,* an extremely close relative of *Y. carnerosana*, which is common in the limestone mountains along the Rio Grande south of Sierra Blanca and Van Horne, Texas. The plants seen along the

Chihuahua-Ojinaga railroad possibly may represent *Y. Faxoniana* or forms connecting it with *Y. carnerosana.*

Yucca filifera Chabaud, Rev. Hort. **48:** 432. *f. 97* (1876); Carrière, Rev. Hort. **52:** 376. *f. 75–77* (1880), op. cit. **56:** 53. *f. 12, 13* (1884); Baker, Garden and Forest **1:** 78. *f. 13, 14* (1888).

Yucca baccata var. *australis* Engelm. Trans. Acad. Sci. St. Louis **3:** 44 (1873).

Yucca australis (Engelm.) Trel. Rep. Mo. Bot. Gard. **3:** 162. *t. 3, 4* (1892), op. cit. **13:** 103. *t. 60, 61* (1902).

VERNACULAR NAMES: Palma china; Palma loca; Palma grande.

COAHUILA: Saltillo, tree yucca, 1898, *Palmer 197;* Parras, etc., sterile plain, largest specimens seen 15–25 ft. high, trunks often 2–3 ft. thick, Nov. 1852, *Thurber 857.*

A large *Yucca,* with pendulous inflorescence and baccate fruits, which becomes much branched and arborescent. It is reported to become 15 m. in height and to develop a trunk over 2 m. thick. In our area, trees 8–12 m. high are not uncommon. It is a plant of the broad valleys in the southern parts of our area, where it is frequently found in large colonies. From north of Monterey, N. L., it ranges on the east side of the Sierra Madre south into western Tamaulipas. It enters our area via the valleys northwest and west of Monterey. It grows in the valley near Saltillo and in the plain south of the Sierra Gavia, about 100 km. to the northward. West of Saltillo it is known from between General Cepeda and Seguin and about Parras. It appears to be widely distributed in northern Zacatecas. Kirkwood, Pop. Sci. Monthly **75:** 442 (1909), states that in this latter area it often occurs with *Y. carnerosana* but has lower altitudinal limits and is primarily "a native of the wide valley lands, where it often occurs in great profusion as at Palmas Grandes, a few miles west of Mazapil, and again on the footslopes some twenty miles east of Camacho." In extreme eastern Durango, Trelease reports the species as present along the railroad "in varying quantity, about La Mancha and thence south to about Symon." According to Trelease the species extends south through San Luis Potosi to Queretaro.

The name *Yucca filifera* is based upon a plant flowering under cultivation in France and said to have been introduced from Mexico by Roezl. The descriptions and illustrations of the plant clearly apply to the present species and antedate by over twenty years the name *Yucca australis,* coined and given currency by Trelease. Trelease's binomial is based upon *Yucca baccata* var. *australis* Engelm., a name founded upon material of the present species collected by Thurber near Parras and by Gregg near Saltillo. It is possible that our species may have earlier names, antedating even *Y. filifera,* in *Yucca scabrifolia* Baker and *Yucca polyphylla* Baker, Gard. Chron. **1870:** 1088 (1870). These latter species were named by Baker upon the basis of small sterile plants of unknown origin cultivated in England. While it is possible that they may represent *Y. filifera,* the descriptions of them published are brief, incomplete, and ambiguous, and, in addition, the names are probably to be rejected as provisional names, since, when publishing them, Baker remarked that "I give now a provisional name for each of them, and an epitome of the notes which I have already made, reserving diagnosis and full description for our intended monograph . . ." Baker failed to amplify his original remarks and later, Jour. Linn. Soc. **18:** 228 (1880), indicated, without actually making trinomials, that they were only varieties of *Y. baccata.*

Yucca Endlichiana Trel. Rep. Mo. Bot. Gard. **18:** 229. *t. 15–17* (1907); Endlich, Beiheft z. Tropenflanzer **9:** 260 (1908).

VERNACULAR NAME: Pitilla.

This remarkable acaulescent fleshy-fruited yucca was apparently based upon material collected south of the Sierra Paila near Marte Station. It spreads by rhizomes and its rosettes of few strictly ascending or erect leaves (2.5–5 dm. long) are crowded to form dense clumps of moderate size. The inflorescence is shorter than the leaves. The small, cream to brownish or purplish flowers are described as 15 mm. long and borne on slender elongate pedicels over 25 cm. in length. The fruit is said to be 25–30 mm. long, subglobose to broadly ellipsoid, and not very fleshy. Endlich reports that it is usually found in very dense, sharply defined, usually not very extensive clumps among the desert scrub in the area between the Sierra de Parras, the Sierra del Rosario, and the Sierra de la Paila, where, especially in the Valle de Rosario, it is common. The smooth dark green or bluish green leaves have a brown margin bearing stiffish recurving fibers.

Yucca elata Engelm. Bot. Gaz. **7:** 17 (1882).

VERNACULAR NAMES: Palmito; Sollate.

COAHUILA: Rancho El Pino, fairly common on sandy flat, *Stewart 1781;* 1 mi. south of Las Norias, 20 mi. north of Esmeralda, silty soil especially about sabanetas, trunk 1–6 ft. tall, inflorescence 4–8 ft., fibers detaching and curling up at leaf-bases, *Johnson & Muller 348;* 1 km. south of Las Norias, colony on silty flat, *Stewart 362;* east of Laguna de Jaco, confined to gypsum ridges, common, trunk to 5 ft., *Johnston & Muller 1077;* 4 km. southeast of Laguna del Rey, sandy slope, common, 2 m. tall, *Stewart 2655.* CHIHUAHUA: Hills around Juarez, 1912, *Stravus* (Mo); international boundary near White Water, June 18, 1892, *Mearns 363* (US); between Casas Grandes and Sabinal, *Nelson 6371;* Moctezuma, 1900, *Trelease 400* (Mo); Chihuahua, 1900, *Trelease 399* (Mo); 10 mi. west of Julimes, frequent on sandy plain, *Stewart & Johnston 2097;* southeast of San Pablo, April 30, 1847, *Gregg* (NY).

Ranging from Arizona east into Brewster County, in trans-Pecos Texas, and south into our area, where it is restricted to finely divided, usually valley soils. In our area it grows on silts, sandy soils, and gypsum in locations where there is evidence of moderate amounts of subterranean water, or in places where the storm waters collect and the soil beneath the surface remains moist during the growing season. In Coahuila and Chihuahua it is found in the open valleys and on rolling country dominated by grass or desert scrub. The species is uncommon in Coahuila and apparently is restricted to the western portions of the state. In addition to the Coahuilan stations from which I have cited specimens, I know it only near Castillon, where occasional plants grow about sabanetas. It probably grows in the northwest corner of the state, for it has been collected near the Rio Grande near the tip of the Big Bend at San Vicente, Texas. In northeastern Chihuahua I have seen the species, usually represented by only a few plants, at various places between Ojinaga and Chilicote, near Trincheras, along the road between Pirámide and Castillon, between San Francisco and Mesteñas, and between Organos and Charca de Peña.

Yucca rostrata Engelm. ex Trel. Rep. Mo. Bot. Gard. **13:** 68, *t. 40–42* (1902).
Yucca rostrata var. *linearis* Trel. Rep. Mo. Bot. Gard. **18:** 226 (1907).
Yucca rostrata forma *integra* Trel. Rep. Mo. Bot. Gard. **22:** 102 (1911).

VERNACULAR NAMES: Soyate; Amole.

COAHUILA: Peyotes, April 27, 1900, *Trelease* (Mo); Allende, *Marsh 1757;* Sabinas, May 21, 1902, *Nelson 6231* (US, Mo), *6831* (NY); Hac. Mariposa at Puerto Santa Anna, *Wynd & Mueller 257;* abundant in Hac. La Babia, northwest of Sabinas, March 10, 1906, *Endlich 1161* (Mo; type of forma *integra*); Sierra del Carmen, 3 km. northeast of Hac. Encantada, common on hillsides, 2 m. tall, *Stewart 1582;* Berrendo, 3 m. tall, flower stalk 7 m. high, fruit with offensive odor, *White 1861;* Monclova, Aug. 1880, *Palmer;* Monclova, tree 8–10 ft., panicle 2.5–3 ft. long, much branched, Aug. 1880, *Palmer* (Mo, TYPE); east of La Rosa, dry mountain slope, *Wynd & Mueller 47;* Sierra Pata Galana, March, *Purpus 5586* (UC); Sierra Parras, rocky canyons, April 1905, *Purpus 1132* (UC); Parras, April 9, 1905, *Purpus* (Mo); Parras, March 1905, *Purpus 1103* (UC); two plants from canyons of Sierra Parras received at Mo. Bot. Garden June 5, 1905, *Purpus* (Mo, type of var. *linearis*).

Extending from just within Texas (Boquillas area, and 6 mi. above mouth of Maravillas Canyon) in the Big Bend Region, south through eastern Coahuila to west of Saltillo and then west across southern Coahuila. It is known only from areas of limestone rock. It grows in rocky places on hillsides and along arroyos. Reports of the species from Chihuahua are almost certainly erroneous. Among our three species with flexible pallid leaves with a horny yellow margin, *Y. rostrata* is readily distinguished by its remarkable rostrate capsules. The fruit is ovoid with the upper third gradually contracted into a coarse stout beak 2–3 cm. long. The type of the species was collected near Monclova. The species usually has the leaf-margins denticulate, but plants with smooth or nearly smooth margins appear to be not uncommon. One of these latter forms, from Hacienda La Babia, was described as forma *integra* Trel.

The material cited from southern Coahuila has narrow leaves. The northern typical plants have leaf-blades 7–13 (usually 8–12) mm. wide and 3–6 dm. long. Trelease based his var. *linearis* upon material collected by Purpus in the Sierra de Pata Galana and Sierra Parras which has narrowly linear blades 3–4 mm. wide and 4 dm. long. Some collections from Parras (*Purpus 1132*) are less extreme. Mrs. McKelvey, who had made a detailed study of all available material of *Y. rostrata* and *Y. rigida*, tells me that she suspects there are one or more undescribed species of *Yucca* in southern Coahuila and that one of these may be represented among the not very satisfactory collections of Purpus which I have cited above. She is particularly suspicious of *Purpus 1103* from Parras, *Purpus 5583* from Sierra Pata Galana, and *Purpus 7717* from Viesca, in which the associated flowers are smaller in size and different in form from any known in indubitable *Y. rostrata* and its allies. Some of Trelease's original suite, other than the type, of var. *linearis* may also represent this aberrant plant. Obviously, until there are good new collections of this group of yuccas of southern Coahuila, showing mature foliage, flowers, and fruit, their classification must remain doubtful and tentative.

Yucca Thompsoniana Trel. Rep. Mo. Bot. Gard. **22**: 101. *t. 104–107* (1911).

VERNACULAR NAME: Palmilla.

COAHUILA: Santa Elena, eastern foothills of Sierra Cruces, rocky hillsides and slopes, trunk 1–4 m., frequent, *Stewart 2279;* near Santa Elena, frequent, especially on limestone ledges, stems usually about 6 ft. tall, *Johnston & Muller 329;* arid hills near La Pistola, eastern border of Llano de Guaje, stems to 10 ft., locally common on limestone ledges, *Johnston & Muller 771;* western base of Picacho del Fuste, along arroyos and along terraces of cemented gravels, frequent in colonies, *Johnston 8458;* just east of Laguna de Leche, along steep rocky arroyo, colonies, stems 8–12 ft. tall, leaf-margins smooth, *Johnston 8603, 8604, 8605;* east of Rosario station, large local colony on gravelly outwash from canyon, trunks to 8 ft., leaf-margins smooth, *Johnston 8831.*

A species of western Texas, from Presidio to Val Verde County, and ranging south into our area. Apparently restricted to limestone. The type specimen was collected by Bigelow from mountains at "Bufatello near Presidio del Norte," Aug. 10, 1852, presumably along the Rio Grande in Presidio Co., Texas, or across the river in adjoining Chihuahua. In northeastern Chihuahua I have seen the species on the pass about 10 miles south of Mula and on the hillsides 5–10 miles northwest of San Carlos. The plant is apparently widely distributed in western Coahuila on limestone hillsides, frequently about ledges, or along terraces of limy conglomerate along arroyos, and rarely in gravels of alluvial fans about the mouths of canyons. It commonly occurs with *Yucca carnerosana* but has somewhat lower altitudinal limits. Frequently locally common but usually scattered. I have observed the species, without collecting it, in the Sierra Almagre, between Esmeralda and El Oro, on the Sierra Aplanchada, west of San Antonio de los Alamos, in the southern canyon of the Sierra del Pino, in canyons southeast of Puertecito, and in hills north of Tanque Colorado. The yuccas observed on the steep canyon-sides of Cañon del Agua, just north of Cuatro Cienegas, probably were of this species, though possibly they may represent *Y. rostrata*.

Yucca Thompsoniana is one of the three species in our area having flexible elongate pallid leaves with horny yellow margins. It ranges in western Coahuila and adjoining Chihuahua, whereas *Y. rostrata* occupies the limestones in eastern (and apparently southern) Coahuila, and *Y. rigida* occupies the limestone areas from northeastern Chihuahua south into northeastern Durango.

Yucca rigida (Engelm.) Trel. Rep. Mo. Bot. Gard. **13**: 65. *t. 35, 36* (1902).
Yucca rupicola var. *rigida* Engelm. Trans. Acad. Sci. St. Louis **3**: 49 (1873).
Yucca rigida inermis Trel. Rep. Mo. Bot. Gard. **22**: 102 (1912).

VERNACULAR NAMES: Palma San José; Palmito.

CHIHUAHUA: Sierra Santa Eulalia, 1885, *Wilkinson* (US, UC); rocky hills near Chihuahua, flowers April 17, 1885, fruit May 17, 1885, *Pringle 165;* Picachos station, 1941, *Johnston;* dry valley between Mapimi and Jimenez, rather common, 5–10 ft. tall, with seed-pods, April 18, 1847, *Gregg 477* (Mo, TYPE). DURANGO: South of Picardias, in box-canyon, Aug. 20, 1900, *Trelease 396* (Mo). ZACATECAS: Mountains near Symon, June 1908, *Lloyd 128;* Sierra del Chivo, near Symon, June 1908, *Lloyd 77* (Mo, type of forma *inermis;* UC, leaf-margins denticulate).

Under the present species are grouped plants of Chihuahua, northeastern Durango, and adjoining Zacatecas which have pallid flexible leaves with horny yellow margins. Information regarding them is fragmentary and the collections representing them are few and incomplete. Possibly more than one species is involved. These western plants are most closely related to *Y. Thompsoniana* but appear to differ from that more easterly ranging species in having somewhat broader and longer leaves and tougher capsules said to have the valves flattened on the back. Until more collections are available for study, the species must remain puzzling, obscure, and somewhat questionable.

The type of *Y. rigida,* a specimen consisting of leaves and capsules, was collected by Gregg on April 18, 1847 between Mapimi and Jimenez, while traveling rapidly with a small group of mounted soldiers carrying an urgent message from Saltillo to Chihuahua City. On April 18th the party traveled from Arroyo del Cerro Gordo, on the Durango-Chihuahua border (80 mi. northwest of Mapimi), to a point in the desert about 25 mi. southeast of Jimenez. Traveling rapidly, Gregg must have had little time to collect plants. Possibly he may have been able to collect the yucca on the mountain-side or in the canyon at San Bernardo (30 mi. southwest of Escalon), where the party rested at mid-day.

With Gregg's specimen, Trelease associated material he collected at the southeastern end of the Sierra Hispaña, not far from Picardias, a station in the valley of the Rio Aguanaval. He reports that the plant "is abundant on or near rocky hillsides" near Picardias and along the railroad to about Jalisco, a station 10 km. farther southeast. The same species has been collected in the Sierra del Chivo, near Symon, along the same railroad about 100 km. still farther to the southeast. Collections from the latter locality (*Lloyd 77*) with smooth leaf-margins have been described as *Y. rigida inermis.* The type of this form at St. Louis does have smooth entire leaf-margins. However, a duplicate of the same collection at Berkeley has the leaf-margins denticulate.

In addition to the plants of Durango, Trelease also associates with Gregg's collection a yucca that has been collected in the general vicinity of Chihuahua City. Trelease mentions the Sierra Santa Eulalia. Wilkinson's material is labeled as from that range of mountains. Pringle's collection, no. *165,* is given as from "rocky hills near Chihuahua" and as made up of flowers collected April 17, 1885, and fruit collected May 17, 1885. According to Pringle's published diary he was in Bachimba Canyon, 25–35 km. southeast of Chihuahua, on April 17th, and on that date he particularly mentions collecting "flowers of 165." On May 17, 1885, the date on which the fruit of the yucca is given as collected, Pringle was botanizing in a large canyon (in the Sierra Guadalupe?) southwest of Jimulco, just inside the Durango boundary about 25 km. southeast of Picardias, where Trelease found *Y. rigida.* Unless there is an error in the printed date appearing on Pringle's label, one must conclude that the fruit associated with *Pringle 165* did not grow on the "rocky hills near Chihuahua."

Probably to be associated with the plant collected about Chihuahua is the yucca with pale yellow-margined leaves which is frequent on limestone hills along the Chihuahua City-Ojinaga railroad from near Trancas to near the Rio Conchos. This plant suggests *Y. Thompsoniana* but is coarser, with a larger head of leaves. Plants examined near Picachos Station had leaves 25–30 mm. wide and 5–6 dm. long.

AMARYLLIDACEAE

Cooperia Drummondii Herb. Bot. Reg. **22:** *t. 1835* (1836).

Vernacular name: Cebollita.

Coahuila: Santa Anna Canyon, *Marsh 535;* Hac. Encantada, hillside, fl. white, *Stewart 1738;* Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1450;* battlefield near Buena Vista, fl. white, *Gregg 84;* 7 km. west of Santa Elena, Sierra Cruces, black loam on hillside, *Stewart 1738.*

Northeastern Mexico (? and Oaxaca) north to New Mexico, Kansas, and Louisiana.

Cooperia pedunculata Herb. Amaryll. 179. *t. 42* (1837).

Vernacular name: Flor de Mayo.

Coahuila: Sierra San Vicente, Cañon Espantosa, April 27, 1941, *Schroeder 1;* near Saltillo, stony hillsides, fl. white, sweet scented, April 1898, *Palmer 70.*

Northeastern Mexico and eastern half of Texas.

Zephyranthes Lindleyana Herb. Amaryll. 174. *t. 35* (1837).

Zacatecas: Cedros, *Lloyd 40.*

Ranging from Hidalgo northward into Nuevo Leon and westward onto the plateau to San Luis Potosi, Charcas, and Cedros. To be expected in southern Coahuila. The corolla is pink.

Zephyranthes longifolia Hemsl. Diag. Pl. Nov. **3:** 55 (1880).

Vernacular name: Cebollita.

Coahuila: 2 mi. west of San Rafael, tobosa flat, *Stewart 657a;* valley west of Bufido, silty soil, *Johnston & Muller 845B;* La Azufrosa, fl. yellow, *Gregg 491;* Saltillo, stony hill-slope, fl. lemon-yellow, 1898, *Palmer 219.* Chihuahua: Valley 30 km. northwest of Jaco, silty flat, fl. yellow, *Stewart 683.* Zacatecas: Cedros, hills, *Lloyd 124.*

From San Luis Potosi north to western Texas and Arizona, usually on valley silts.

Agave (*Manfreda*) **brunnea** Wats. Proc. Am. Acad. **26:** 156 (1891).

Vernacular name: Huaco.

Coahuila: 10 km. east of La Palma, gravelly hills north of Sierra Cruces, 5–6 dm. tall, *Stewart 655;* eastern foothills of Sierra Cruces, 7 mi. north of Santa Elena, rocky bank among bushes, leaves succulent-herbaceous, dark green mottled with terra-cotta, somewhat glaucous, *Johnston & Muller 1012;* west base of Picacho de San José, dry hillside, 8–10 dm. tall, not common, *Stewart 643;* Saltillo, 1880, *Palmer 1307;* battlefield of Buena Vista, 1888, *Pringle 2218* (type). Chihuahua: 6 mi. south of Camargo, leaves with reddish markings, corolla brownish inside, *White 2190.*

The plant has the underground stem erect and much shortened and surrounded by the crowded leaf-bases to form a tunicate bulb. The roots are fleshy tubercles. The leaves are very juicy and neither rigid nor sclerified. They form a flattened basal rosette and have conspicuously mottled blades 1–2 dm. long and 2–3(–4) cm. wide. The flowers are brownish. The cited material from Chihuahua differs in having a less well developed bulb in which the old leaf-bases become fibrous, but otherwise it is much like the Coahuilan material.

Agave (*Manfreda*) **planifolia** Wats. Proc. Am. Acad. **22**: 479 (1887).

CHIHUAHUA: Canyon in mountains southwest of Mapula station, warm sandy banks of stream, *Pringle 1141* (TYPE).

The type of this species, cited above, is in fruit. Watson describes the corolla as 18 mm. long with the segments 3–4 times the length of the tube. The leaves are very large and the base of the stem is not bulb-like, but rather is a coarse rhizome clothed with fibrous remnants of old leaves.

Agave (*Manfreda*) **singuliflora** (Wats.) Berger, Die Agaven 31 (1915).
Bravoa singuliflora Wats. Proc. Am. Acad. **22**: 479 (1887).

CHIHUAHUA: Cool slopes in mountains just south of Chihuahua, *Pringle 1142* (TYPE).

A plant with a loose tunicate bulb, fleshy roots, and linear leaves. Ranging widely in western Chihuahua.

Agave (*Littaea*) **Lecheguilla** Torr. Bot. Mex. Bound. 213 (April 1859).
Agave Poselgeri Salm-Dyke, Bonplandia **7**: 92 (April 1859).
Agave lophantha var. *Poselgeri* Berger, Die Agaven 93 (1915).
Agave lophantha var. *pallida* Berger, Die Agaven 93 (1915).

VERNACULAR NAME: Lechuguilla.

COAHUILA: Sierra del Pino, *Johnston & Muller 658;* Potrero del Cuervo Chico, *Johnston 8571;* Saltillo, 1898, *Palmer 227;* east of Cienega Grande, May 18, 1847, *Gregg 699;* Jimulco, *Pringle 28*. CHIHUAHUA: Sierra Santa Eulalia, *Pringle 157;* 8 mi. west of Escalon, *White 2064*. ZACATECAS: Cedros, *Kirkwood 8*.

A common and characteristic plant in the limestone areas from western Texas south through our area at least to San Luis Potosi. There is some doubt as to the correct name for this well known species. The two earliest names assigned the species, *A. Lecheguilla* and *A. Poselgeri,* both appear to have been published in April, 1859. Since I have been unable to establish their precise dates, I have accepted the more familiar of the two. *Agave Lecheguilla* was based chiefly upon material collected by Charles Wright near Del Rio and along Devils River, in southern Val Verde County, Texas. *Agave Poselgeri,* given as from the "mexicanischen Hochebene," probably came from near Saltillo or San Luis Potosi, where Poselger is known to have collected cacti and other succulents. *Agave lophantha* var. *pallida* is based upon material from Parras collected by Purpus.

The plant is well known as "Lechuguilla" and is all too common on sunny open mountain-slopes and in the valleys near the mountains. It occurs on clay, but it is most abundant in rocky soils and appears to favor limestone areas. It multiplies by stolons, and a single plant may have its numerous clusters of dagger-like leaves scattered abundantly over as much as 50 square meters. The leaves in especially favorable locations may become 4–5 dm. long, but commonly they are 15–30 cm. in length. Rigid and dagger-like, the leaves are terminated by a formidable spine. Anyone who has been jabbed in the ankle by Lechuguilla and suffered the first sharp pain and, worse, the aching in the ankle-joint which may continue afterwards for over a week, knows why the plant is a constant hazard to man and beast in the extensive tracts of country where it abounds. It is a much cursed distraction in the peaceful pursuits of plant-collecting; I have suffered more from the spines of Lechuguilla than from all the other spiny plants, mosquitoes, and poison "varmin" lumped together. A less human botanist might marvel at the vigor and adaptations which have permitted it to have become such a widespread and successful plant in the deserts of Coahuila, but I can only rank it as a pest and a curse on the country.

Agave (*Littaea*) **univittata** Haw. Philos. Mag. **10:** 415 (1831).

Agave heteracantha Zucc. Act. Acad. Caes. Leop.-Carol. **16**^{2}**:** 675 (1833).

Agave lophantha Schiede ex Kunth, Enum. **5:** 838 (1850).

COAHUILA: Rancho Agua Dulce, eastern slope of Sierra San Manuel, *Wynd & Mueller 380.*

A plant of the eastern slopes of the Sierra Madre, from Nuevo Leon southward to the arid portions of the plateau in east-central Mexico. It is closely related to *A. Lecheguilla,* which replaces it in the arid plateau of northern Mexico, differing in its thinner, less rigid, flat, more strap-like, and more elongate leaves, which commonly have an evident median white stripe.

Agave (*Littaea*) **glomeruliflora** (Engelm.) Berger, Hort. Martol. 12 (1912), Die Agaven 93 (1915).

Agave heteracantha forma *glomeruliflora* Engelm. Gard. Chron. II. **19**^{1}**:** 48 (1883).

Agave chisosensis Muller, Am. Midl. Nat. **21:** 763 (1939).

VERNACULAR NAME: Maguey de Garcia.

COAHUILA: Sierra de los Guajes, fairly common on hillside, *Stewart 1502;* Sierra del Pino, single colony of 20–25 plants on rocky hill just below oak-belt, rosettes solitary, 12 in. tall and 15 in. broad, stem 12 ft. tall, less than upper 3 ft. floriferous, *Johnston & Muller 711.*

This species was based upon material from the Guadalupe Mts. in western Texas. It is evidently allied to *A. Lecheguilla* but differs in its narrowly paniculate rather than spicate inflorescence, the flower-clusters being borne on branches several centimeters long. The leaves appear to average larger and to have coarser lateral thorns than is common in its relative. Possibly it is only a phase of that species.

Agave (*Littaea*) **falcata** Engelm. Trans. Acad. Sci. St. Louis **3:** 304 (1875).

VERNACULAR NAMES: Guapilla, Espadín, Palmita.

COAHUILA: Sierra Guajes, Cañon Madera, east of Buena Vista, hillsides, *Stewart 1499;* western base of Picacho del Fuste, mountain-side, *Johnston 8370;* 20 mi. north of Hipolito, dry rocky ridge, *Wynd & Mueller 69;* Chojo Grande, 27 mi. southeast of Saltillo, 1905, *Palmer 716;* Buena Vista, 1848, *Gregg 299;* Gomez Farias, stony slopes, *Shreve & Tinkham 9605;* Parras, 1880, *Palmer 1314;* Jimulco, dry hills, *Pringle 7.* ZACATECAS: Cedros, low ridges, *Kirkwood 4.*

This species appears to be endemic to our area. It was based upon collections of Wislizenus and Gregg, obtained near Saltillo. It is closely related to *A. striata* Zucc., of Nuevo Leon, San Luis Potosi, and Hidalgo, a plant with very much longer and much more slender leaves, and apparently it replaces that species on the plateau. The leaves of *A. falcata* have a stiff linear falcately curved blade 15–25 cm. long. The dense rosettes grow in very crowded masses, usually on banks of cemented gravels or limestone ledges. The species seems to be restricted to the eastern parts of the plateau in northern Coahuila. It has not been noted in the Sierra del Pino. It is present on the slopes about Potrero de la Mula, north of Ocampo, and in Charretera Canyon, Sierra Madera, from the mouth of the canyon up to sunny ledges in the oak-belt. Berger, Die Agaven 79–80 (1915), reports collections from Hac. Tortuga near Sauceda (*Endlich 879a*), southern slopes of Sierra de la Paila near Marte Station (*Endlich 879*), and Sierra de Parras (*Purpus*).

Agave (*Littaea*) **potrerana** Trel. in Standley, Contr. U. S. Nat. Herb. **23**: 138 (1920).

CHIHUAHUA: Portrero Peak, summit of the southern Sierra Santa Eulalia east of Mapula station, *Pringle 802* (TYPE), *584*.

A well-marked species, known only from the type locality. The type collection is *Pringle 802*, not no. "*302*" as originally cited by Trelease.

Agave (*Littaea*) **parviflora** Torr. Bot. Mex. Bound. 214 (1859).

CHIHUAHUA: Dry porphyritic hills 6–12 mi. northwest of Chihuahua, *Pringle 1995*.

A rare species, known only from a few stations in southern Arizona, Sonora, and northern Chihuahua.

Agave (*Littaea*) **Victoriae-reginae** Moore, Gard. Chron. II. **4**: 484 (1875).

This species is reported from "Coahuila" by Trelease, Contr. U. S. Nat. Herb. **23**: 139 (1920). It is well known from northern Nuevo Leon and is to be expected within Coahuila east of Saltillo and Monclova.

Agave (*Euagave*) **scabra** Salm-Dyck, Bonplandia **7**: 86 (1839); Berger, Die Agaven 176 (1915).

Agave Wislizeni Engelm. Trans. Acad. Sci. St. Louis **3**: 320 (1875); Trel. Rep. Mo. Bot. Gard. **22**: 89. *t. 75–79* (1912).

Agave chihuahuana Trel. Rep. Mo. Bot. Gard. **22**: 90. *t. 82, 83* (1912).

Agave Havardiana Trel. Rep. Mo. Bot. Gard. **22**: 91. *t. 84–86* (1912).

COAHUILA: Caracol Mts. near Monclova, 1880, *Palmer 1310;* Sierra del Pino, along dry ridge crest, *Johnston & Muller 656*. CHIHUAHUA: Sierra Santa Eulalia, north canyon, *Pringle 22;* vicinity of Santa Eulalia, very common, forming large patches on stony mesas and ridges, stems averaging 15 ft. tall, 1908, *Palmer 138*.

Ranging from Coahuila and Chihuahua north to the mountains of western Texas. The type material of *A. scabra* and *A. Wislizeni* is given as from San Sebastian, on the Rio Nazas about 10 km. northeast of Torreon. Trelease refers to the species garden material said to have been distributed from Lampazos, N.L. He cites under *A. chihuahuana* collections from the hills near Chihuahua (*Pringle 958*), from Cusihuiriachic (*Rose 11654*), and from the Sierra Madre of southwestern Chihuahua (*Endlich 1201*). In the United States (under the name *A. Havardiana*) the species is known from the Guadalupe, Davis, Chinati, and Chisos Mountains, Texas. It is a plant of rocky hills and mountain ridges, usually forming colonies. Herbarium material may be difficult to separate from that of *A. asperrima*. The latter, however, has larger, more elongate leaves and larger, more branched inflorescences, and is characteristically a plant of the valleys and mountain-bases, where it grows singly or in small colonies. San Sebastian, the type locality given for *A. scabra* and *A. Wislizeni*, is in an area where

A. asperrima is to be expected, rather than the present species. However, since the type material of *A. Wislizeni* does appear really to belong to the present concept, one may wonder if it originated, not at San Sebastian, but rather at Cusihuiriachic, where Wislizenus lived for a number of months and where Rose is reported as having found the species.

Agave (*Euagave*) **parrasana** Berger, Notizbl. Bot. Gart. Berlin **4:** 250 (1906), Die Agaven 176. *fig. 58* (1915); Trel. Rep. Mo. Bot. Garden **22:** 90. *t. 80, 81* (1912).

A species based upon garden material originally collected in 1905 in the Sierra de Parras by Purpus. A plant with short very broad leaves, conspicuous elongate terminal spine, and very coarse sparse marginal teeth. Illustrations of it suggest plants growing in crowded colonies in dry open pine forests along the highest ridges of the Sierra Madera.

Agave (*Euagave*) **asperrima** Jacobi, Hamb. Gartenzeit. 561 (1864); Mulford, Rep. Mo. Bot. Gard. **7:** 89. *t. 53* (1896); Berger, Die Agaven 146 (1915).

Agave Caeciliana Berger, Die Agaven 147 (1915).

VERNACULAR NAMES: Maguey; Maguey cenizo.

COAHUILA: Sierra del Pino, ledges near mouth of southern canyon, *Johnston & Muller 725;* San Lorenzo de la Laguna, 1880, *Palmer 1309;* Jimulco, *Pringle 158.* ZACATECAS: Cedros, *Kirkwood 9.*

This is the widely distributed large gray *Agave* scattered among the desert scrub on valley slopes, usually on somewhat stony soils. It also grows in the mountains, where it is occasional on sunny open brushy flats and slopes in the yucca belt. It appears to be restricted to limestone areas. The large gray rosettes may be solitary or, less frequently, in especially favorable places, grouped to form patches of the plant several meters in extent. The flowering shoots commonly reach about 5 m. in height.

The species was based upon garden material said to have been collected by Lindheimer in Texas. In Texas it has been collected near El Paso, in the Big Bend, and along the southern escarpment of the Edwards Plateau. Berger, l.c., reports collections from the Sierra de la Paila, and from San Pedro, Viesca, and Jimulco.

IRIDACEAE

Sisyrinchium Shaffneri Wats. Proc. Am. Acad. **18:** 160 (1883).

Hydrastylus parvus Bicknell, Bull. Torr. Bot. Cl. **27:** 384 (1900).

COAHUILA: Saltillo, along water-courses, fl. yellow, 1898, *Palmer 157;* Saltillo, low valley, 1847, *Gregg 340* (isotype of *H. parvus*).

Ranging from central Mexico north into Coahuila and Chihuahua. The plant tends to stain collecting papers purplish. It has a loosely forking rhizome.

Sisyrinchium tenuifolium H. & B. ex Willd. Hort. Berol. *t. 92* (1809).

COAHUILA: Tableland north of Cañon del Cuervo Chico, thin soil at base of low rounded limestone hills, common, *Johnston 8568;* Lirios, 1880, *Palmer 1301.*

Ranging from Guatemala north to Coahuila and Chihuahua.

Sisyrinchium aff. **arizonicum** Rothr. Bot. Gaz. **2:** 125 (1877).

CHIHUAHUA: Sunny open hillsides about the high valleys at the northwest end of the Sierra Diablo, not common, *Stewart 966.*

The plant cited differs from *S. arizonicum* in having much more slender glaucescent stems and leaves, inconspicuously ribbed leaves, and much smaller spathes. Perhaps it may be more closely related to *S. tenuifolium* or may even be a vigorous form of it.

Sisyrinchium sp.

VERNACULAR NAME: Purole.

COAHUILA: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 528;* Hillcoat Canyon, west of Buena Vista Ranch, July 13, 1938, *Marsh 1316;* Sierra Encantada west of Rancho Buena Vista, crest of high ridge, *Stewart 1456;* Muzquiz, *Marsh 1071, 2130;* Sierra Gloria, *Marsh 1942;* battlefield near Buena Vista, *Gregg 70;* Lirios, 1880, *Palmer 2007;* Carneros Pass, *Pringle 5074;* 22 km. northwest of Fraile, mountain valley, *Stanford et al. 465;* 26 km. northwest of Fraile, top of mountain, *Stanford et al. 446;* Sierra Hechiceros, Cañon Indio Felipe, wet sand near stream, *Stewart 115;* Sierra del Pino, near La Noria, gravelly bench along arroyo, *Johnston & Muller 499;* Sierra Madera, main ridge east of Picacho de Zozaya, high open ridge crest, *Johnston 9016.* CHIHUAHUA: San Pablo, Rio San Pedro, marsh, April 29, 1847, *Gregg 539;* Sierra Diablo, in meadow in high valleys at northwest end of range, *Stewart 1005.*

Cited above is material of blue-flowered perennial species belonging to the complex which in Mexico is generally called *S. scabrum* C. & S. Several species may be represented. Some of the specimens closely resemble named forms from western Texas and others resemble in varying degrees plants from central Mexico.

Nemastylis Pringlei Wats. Proc. Am. Acad. **24:** 85 (1889).

CHIHUAHUA: Southern foothills of the Sierra Hechiceros near El Tule, wet rocky hillside, *Stewart 498.*

Ranging along the western Sierra Madre from Durango north into Arizona. The species of *Nemastylis* here mentioned were identified by Dr. R. C. Foster.

Nemastylis tenuis (Baker) Benth. ex Baker, Handb. Irid. 112 (1892).

COAHUILA: Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 1467.*

Trans-Pecos Texas south to central Mexico.

Iris missouriensis Nutt. Jour. Acad. Nat. Sci. Phila. **7:** 58 (1834).

COAHUILA: Lirios, 1880, *Palmer 1302.*

This species ranges widely in the western United States east to Montana, Colorado, and New Mexico and approaches the Mexican boundary only in southeastern Arizona. If Palmer found the plant growing wild at Lirios, in the Sierra Madre near the Nuevo Leon boundary about 40 km. east of Saltillo, then his specimens represent a remarkable outlying station for the species. It has not since been discovered in Mexico nor at such an easterly point. At Lirios, however, Palmer collected another *Iris* (no. *2009*) representing one of the showy European species which must have come from a garden or from plants escaped from cultivation. Possibly Palmer's material of *I. missouriensis* may have also come from plants either in a garden or escaped from it. It is difficult, however, to imagine the circumstance under which this *Iris* of the western United States could have reached a garden in the remote valley in the Sierra Madre where Palmer collected it.

ORCHIDACEAE

(Identifications by L. O. Williams)

Govenia sp.

Coahuila: Sierra de la Gloria, Aug. 6, 1939, *Marsh 2204.*

The specimen from the Sierra Gloria is sterile but is probably conspecific with the material obtained by Pringle (no. *2794*) in cool rich canyons in the Sierra Madre near Monterey. Pringle's collection is the type of *G. elliptica* Wats., a species now considered a synonym of *G. pauciflora* Lindley. A *Govenia,* probably the same species, is also present in the Sierra Madera. The coarse rosettes of broad leaves, assumed to be this orchid, are frequent on the moist shady slopes in the conifer forests, below the highest crests, in Charretera Canyon. No flowers nor even weathered old fruiting stems were observed in September.

Corallorrhiza elliptica Schlechter, Beih. Bot. Centralbl. **36**^{2}**:** 410 (1918).

Coahuila: Muzquiz, 1936, *Marsh 1062.*

A poorly understood species known also from Chihuahua. Perhaps also referable here are *Corallorrhizae* collected in the Sierra del Carmen, Sept. 12, 1936, *Marsh 635,* and in the Sierra Madera in damp shaded coniferous forests in Cañon Charretera, *Johnston 9008* and *9051.*

Hexalectris grandiflora (Rich. & Gal.) L. O. Williams, comb. nov.
Corallorrhiza grandiflora Richard & Gal. Ann. Sci. Nat. III. **3:** 19 (1845).
Hexalectris mexicana Greenm. Proc. Am. Acad. **39:** 77 (1903).

Coahuila: Sierra del Carmen, Cañon Sentenela, *Wynd & Mueller 530;* Hillcoat Mesa, west of Encantada Ranch, July 25, 1938, *Marsh 2274;* Sierra del Pino, occasional in pine forest, *Johnston & Muller 529;* Sierra Madera, Cañon Charretera, deep leaf mulch in moist shaded canyon in pine forests, *Johnston 8989;* Carneros Pass area, July 1880, *Palmer 2006;* mountains northwest of Fraile, *Stanford et al. 460.*

Known from the Big Bend area in Texas, and from Chihuahua, Coahuila, Nuevo Leon, San Luis Potosi, Michoacan, Puebla, and Oaxaca.

Hexalectris nitida L. O. Williams, sp. nov.

Herbae saprophyticae simplices erectae efoliosae usque ad 3 dm. altae; sepalum dorsale elliptico-oblongum; sepala lateralia elliptico-oblonga obtusa arcuata; petala elliptico-oblanceolata obtusa arcuata; labellum elliptico-ovatum trilobatum; columna generis.

Stems slender, with several short cauline bracts; inflorescence several-flowered, the flowers opening one at a time, the bracts 3–6 mm. long, elliptic-ovate, cucullate; dorsal sepal ca. 11 mm. long and 3.5–4 mm. broad, obtuse; lateral sepals 9–10 mm. long and 3.5–4 mm. broad; petals ca. 10 mm. long and 3.5 mm. broad, 3-nerved with the nerves branched; lip 8–9 mm. long and 6–6.5 mm. broad; lateral lobes of lip ca. 6 mm. long from base of lip, not reaching to apex of the mid-lobe, subovate, obtuse; mid-lobe 3–4 mm. long and 3–3.5 mm. broad, obovate to suborbicular or subquadrate, truncate; lamina of lip with several carinate ridges extending down center and onto the lobes; column ca. 6.5–7 mm. long; pollinia 8, 4 in each cell of anther.

Coahuila: Sierra Mojada, Cañon de Hidalgo, shaded canyon below crest at top of canyon, erect, among rocks, not common, Aug. 4, 1941, *R. M. Stewart 1068* (type, Gray Herb.).

A species to be associated with *H. parviflora* L. O. Williams and sharing with it the distinction of having the smallest flowers known in the genus. From that species it is readily distinguished by the shape of its petals and lip.

Spiranthes rubricallosa Robins. & Greenm. Am. Jour. Sci. **50**: 165 (1895).

COAHUILA: Sierra Madera, moist shaded pine forest, among moss, along the high crest east of Picacho Zozaya, rare, *Johnston 9024*.

Otherwise known from single collections from Chihuahua, Nuevo Leon, and Puebla.

Spiranthes michuacana (Llav. & Lex.) Hemsl. Biol. Centr. Am. Bot. **3**: 301 (1884).

CHIHUAHUA: Hills near Chihuahua, Oct. 1885, *Pringle 521*.

Ranging from Chiapas north through Durango, Sonora, and Chihuahua to southeastern Arizona; also in the Chinati Mts. of trans-Pecos Texas.

Spiranthes durangensis Ames & Schweinf. Bot. Mus. Leafl. Harvard **3**: 128 (1935).
Spiranthes saltensis Ames, Orchid. **2**: 258 (1908); non Griseb. (1879).

This species has been collected on cliffs near the Rio Grande in the Big Bend area of Texas and may be expected in our area. It is otherwise known only from Nuevo Leon, Durango, San Luis Potosi, and Federal District.

Spiranthes cinnabarina (Llav. & Lex.) Hemsl. Biol. Centr. Am. Bot. **3**: 300 (1884).

VERNACULAR NAME: Lirio.

COAHUILA: Sierra del Carmen, Sept. 1, 1936, *Marsh 623;* Hillcoat Mesa west of Encantada Ranch, July 25, 1938, *Marsh 2268;* Sierra Guajes, Cañon Milagro, west of Encantada Ranch, common on hillsides about mouth of canyon, *Stewart 1541;* Caracol Mt., Aug. 1880, *Palmer;* Sierra Gavia, 5 mi. north of Saucillo, hillside, *Johnston 7221;* Puerto San Lazaro, rare on rocky shrubby slopes, *Muller 3054;* Chojo Grande, 27 mi. southeast of Saltillo, gravelly openings in canyon, scarce, 1904, *Palmer 370;* Sierra del Pino, among rocks at head of great western escarpment, about 10 mi. north of La Noria, *Johnston & Muller 545;* Cañon del Cuervo Chico, among Lechuguilla on limestone ridge at head of canyon, not common, *Johnston 8524;* Picacho de San José, dry limestone hillside, *Stewart 1105;* Sierra Mojada, Cañon Hidalgo, canyon below crest, *Stewart 1064;* Sierra de Parras, south of Parras, *Shreve & Tinkham 9871;* Sierra de Parras, Oct. 1910, *Purpus 4690*. CHIHUAHUA: Sierra Santa Eulalia, 1885, *Pringle 632;* Sierra Diablo, canyons and high valley at northern end of range, *Stewart 893, 976*.

Ranging from the Big Bend area in Texas south through our area, San Luis Potosi, and Hidalgo to the drier parts of central and southern Mexico and adjoining Guatemala. An attractive plant, with a conspicuous orange-red flower-cluster, which, though seldom common, is widely distributed in our area on open slopes and ridges in arid rocky limestone soils, commonly in the company of Lechuguilla. Its habit may be an unconventional one for an orchid, but anyone who has tried to dry specimens of the plant without continued artificial heat can appreciate its ability to retain its moisture under desert conditions.

Habenaria limosa (Lindl.) Hemsl. Biol. Centr. Am. Bot. **3**: 305 (1884).

COAHUILA: Carneros Pass area, Aug. 1880, *Palmer;* mountains near Carneros Pass, Sept. 15, 1889, *Pringle 2828*.

Known from Arizona and New Mexico and from Sonora, Coahuila, and Nuevo Leon; south to Guatemala.

Habenaria brevifolia Greene, Bot. Gaz. **6:** 218 (1881).

COAHUILA: Sierra Madera, Cañon del Agua, leaf-mold in moist oak-maple forest, *Muller 3224;* Sierra Madera, La Pipa fork of Charretera Canyon, moist shady conifer forest, *Johnston 9007, 9007a;* Sierra Madera, rocky open pine forest of high crest east of Picacho de Zozaya, *Johnston 9025.*

Known from New Mexico, Chihuahua, Coahuila, Nuevo Leon, Tamaulipas, and south to Oaxaca.

Malaxis fastigiata (Reichenb. f.) Kuntze, Rev. Gen. **2:** 673 (1891).

COAHUILA: Caracol Mt., Aug. 1880, *Palmer 1300.*

Known from Arizona and New Mexico, and from Chihuahua, Coahuila, and Nuevo Leon; south to Costa Rica.

Malaxis Ehrenbergii (Reichenb. f.) Kuntze, Rev. Gen. **2:** 673 (1891).

COAHUILA: Sierra del Carmen, Sept. 15, 1936, *Marsh 560a;* Sierra del Pino, high eastern ridge, one plant in rich shady soil, fl. purple, *Stewart 2290;* Sierra Madera, Cañon del Agua, dense pine-oak forest on steep slope, sparse, *Muller 3211;* Sierra Madera, Corte Blanco fork of Charretera Canyon, local in deep leaf-mulch under oaks in deep moist shaded ravine at lower edge of pine-belt, *Johnston 8982;* mountains northwest of Fraile, *Stanford et al. 407.*

Ranging from New Mexico and Arizona south through Coahuila and Chihuahua to Guatemala.

Malaxis Soulei L. O. Williams, Ann. Mo. Bot. Gard. **21:** 343 (1934).

COAHUILA: Sierra Madera, Corte Blanco fork of Charretera Canyon, local in deep leaf-mulch under oaks in deep moist shaded ravine at lower edge of pine belt, growing with *M. Ehrenbergii, Johnston 8981.* CHIHUAHUA: Canyon in Mapula Mts., cool slopes, Nov. 4, 1886, *Pringle.*

Western Texas (Davis Mts.) to Arizona south through Nuevo Leon, Coahuila, and Chihuahua to Panama.

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